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AMPUTATIONS AT THE MASSACHUSETTS GENERAL
HOSPITAL, BOSTON, MASS.

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AMPUTATIONS AT THE MASSACHUSETTS GENERAL HOSPITAL, BOSTON, MASS.

Compiled by JAMES R. CHADWICK, M.D.

LATE SURGICAL HOUSE OFFICER.

MAY 1, 1871.

THE following tables comprise the results of 699 major amputations of the limbs. The larger part have never before been made public. In 1851, Dr. Hayward published a list of the amputations performed in this Hospital up to that date, but with so few details, that in making up the present series it has been found imperatively necessary to refer to the original records in order to obtain all the data bearing upon the cases recorded. No pains have been spared to render the abstract correct and complete.

The results are compared with those obtained, so far as published, in the New-York City Hospital, the Pennsylvania Hospital and the Boston City Hospital.

Of the 699 cases, the result in seven is unknown, either from imperfection in the records, or in consequence of early removal from the Hospital—of course these do not enter into the estimate of mortality.

EXPLANATION OF TABLES.

“Primary” signifies within 24 hours of the time of the accident.

“Secondary” any time after that period.

“Pathological” includes all amputations for non-traumatic cases.

“Duration” signifies the period from the date of the accident to the date of the operation.

“Length of time” signifies the period from the date of the operation to the date of the discharge.

The fractions $\frac{1}{3}$, $\frac{2}{3}$, $\frac{3}{3}$, designate, respectively, the upper, middle and lower thirds of the limb; and $\frac{1}{3}-\frac{2}{3}$ designate the junction of the upper and middle thirds, &c.

There have been no amputations at the elbow joint, and only two at the wrist joint, which latter have been included in the tables, with the forearm.

As my friend Dr. Wood has already tabulated the amputations at the knee joint, they are, with his permission, incorporated in this paper, together with his deductions from them.

Three amputations at the ankle joint—one by each of the three methods of Roux, Syme and Liston—have been included with those of the leg.

In all fatal cases where the cause of death is not especially stated, it may be attributed to exhaustion, although in a few of these pyæmia was suspected.

Table 1. AMPUTATIONS AT SHOULDER JOINT.—TRAUMATIC—PRIMARY.

No.	Operator.	Date.	Occupation.	Sex and Age.	Nature of Injury.	Dura- tion.	Method of Amputation.	Result.	Length of Time.	Details.
1	J. M. Warren	May 16, 1851	Laborer	M. 32	Comp. com. fract. of arm	3 h.	Flap	Recovery	25 d.	Crushed between rollers; erysipelas.
2	Townsend	Sept. 27, 1851	"	M. 24	"	2 h.	"	"	63 d.	Mutilated by machinery as high as $\frac{2}{3}$.
3	"	Aug. 15, 1852	Mechanic	M. 21	"	10 h.	"	"	65 d.	R. R. accident; lacerated up to axilla.
4	"	Sept. 9, 1852	Laborer	M. 29	"	13 h.	"	Death	6	Comp. fracture of scapula and fracture of clavicle.
5	"	Aug. 15, 1855	Mechanic	M. 27	"	1 $\frac{1}{2}$ h.	"	Recovery	132 d.	R. R. accident; comp. fracture of leg; intoxication.
6	Gay	Aug. 10, 1855	"	M. 23	"	2 h.	"	"	74 d.	Delirium tremens; sloughing of flaps.
7	"	Aug. 28, 1857	"	M. 38	"	2 h.	"	Death	37 d.	R. R. accident; incised wound of thigh.
8	Cabot	Nov. 23, 1859	Laborer	M. 32	"	2 h.	"	"	4 d.	Laceration of arm; delirium tremens.
9	Bigelow	Jan. 6, 1860	Machinist	M. 50	"	2 h.	"	"	20 h.	R. R. accident; delirium; d. from shock.
10	Cabot	Aug. 22, 1860	Brakeman	M. 32	"	8 h.	"	Recovery	50 d.	" " scalp wound.
11	Clark	June 29, 1864	Mason	M. 36	"	4 h.	"	Death	6 d.	" " fract. of r. ulna; contusion of scalp.
12	Hodges	Sept. 3, 1864	Soldier	M. 23	Comp. fracture of arm	2 h.	"	Recovery	53 d.	Premature explosion; sloughing of flaps.
13	"	Oct. 10, 1865	Papermaker	M. 49	"	24 h.	"	Death	12 d.	Scalp wound; collapse; autop. showed int. injuries.
14	Cabot	Dec. 2, 1870	Engineer	M. 50	Comp. com. fracture of arm	2 h.	"	"	6 d.	Laceration of abdomen and leg, fracture of ribs, &c.
15	Bigelow	Feb. 16, 1871	Photographer	M. 32	"	3 h.	"	"	1 d.	Scalp wound; intoxication; d. from collapse.

Recovered, 7 Deaths from Exhaustion, 5
Died, 8—Total, 15.
Ratio of mortality, 53.32 per cent. Collapse, 2 Shock, 1

R. R. accidents 6, of which 3 were fatal.

Table 2. AMPUTATIONS AT SHOULDER JOINT.—TRAUMATIC—SECONDARY. No Cases.

Table 2. AMPUTATIONS AT SHOULDER JOINT.—PATHOLOGICAL.

No.	Operator.	Date.	Occupation.	Sex and Age.	Disease.	Dura- tion.	Method of Amputation.	Result.	Length of Time.	Details.
1	Townsend	March 5, 1853	Mechanic	M. 41	Chronic disease of joint	3 y.	Flap	Recovery	84 d.	Encephaloid.
2	Bigelow	Jan. 9, 1858	Laborer	M. 47	Tumor of arm	24 y.	"	"	103 d.	Great burrowing of pus in arm.
3	Gay	Aug. 28, 1858	"	M. 26	Necrosis of humerus	5 w.	"	"	60 d.	Glenoid cav.; acromion & coracoid processes rem'd;
4	Cabot	Dec. 18, 1858	"	M. 50	Tumor of shoulder	1 y.	"	Death	8 d.	Encephaloid; not quite cicatrized. [encephaloid.
5	"	Dec. 30, 1859	Housewife	F. 38	" arm	14 mo.	"	Recovery	53 d.	Cicatrices of burn; vomiting; head affection.
6	J. M. Warren	April 3, 1860	Child	M. 7	Ulcers of shoulder and arm	2 $\frac{1}{2}$ mo.	"	Death	113 d.	Integument removed by belt of machinery.
7	Gay	Aug. 2, 1860	Wool-carder	M. 13	Ulcers of arm	2 mo.	"	Recovery	18 d.	Encephaloid; delirium.
8	Bigelow	Jan. 14, 1864	Carpenter	M. 68	Tumor of arm	7 mo.	"	"	47 d.	Much reduced before op.; pyæmia shown at autop.
9	"	Dec. 2, 1867	Shoemaker	M. 17	Necrosis of humerus	8 mo.	"	Death	12 d.	Myeloid; secondary hæmorrhage.
10	Gay	Sept. 23, 1869	Slater	M. 40	Tumor of arm	25 y.	"	Recovery	26 d.	Sarcoma fasciculatum.
11	Bigelow	Jan. 11, 1871	Farmer	M. 32	"	12 y.	"	"	25 d.	

Recovered, 8 Deaths from Exhaustion, 1
Died, 3—Total, 11.
Ratio of mortality, 27.27 per cent. Pyæmia, 1
Cerebral lesion, 1
Tumors, in 6 cases.
Ulcers, " 2 "
Necroses, " 2 "
Chr. dis. of joints, " 1 "

Table 3.

AMPUTATIONS OF ARM.—TRAUMATIC—PRIMARY.

No.	Operator.	Date.	Occupation.	Sex and Age.	Nature of Injury.	Duration.	Amputation. Method.	Place.	Result.	Length of Time.	Details.
1	Townsend	July 24, 1847	Weaver	M. 45	Comp. com. fract. of arm	6 h.	Circular		Death	4 h.	R. R. accident; reduced by disease & loss of blood.
2	J. M. Warren	April 28, 1848	Laborer	M. 28	" " " " " " " "	5 h.	"		Recovery	98 d.	Explosion; amputation of other forearm.
3	"	April 7, 1849	Mechanic	M. 22	" " " " " " " "	2 h.	"		"	51 d.	R. R. accident; erysipelas.
4	"	Mar. 29, 1851	Laborer	M. 27	" " " " " " " "	4 h.	"		"	46 d.	
5	Clark	April 28, 1851	Seaman	M. 45	" " " " " " " "	2 h.	"		"	29 d.	
6	"	Mar. 23, 1854	Mechanic	M. 36	" " " " " " " "	3 h.	"		"	28 d.	Sloughing of flaps.
7	Townsend	July 17, 1856	Laborer	M. 24	" " " " " " " "	2 h.	Circular		"	54 d.	Comminuted fracture of other arm.
8	Cabot	Aug. 18, 1856	Housewife	F. 65	" " " " " " " "	3 h.	"		"	32 d.	Intoxication.
9	Townsend	Aug. 5, 1857	Mechanic	M. 21	" " " " " " " "	5 h.	"		"	20 d.	
10	J. M. Warren	May 20, 1860	Minor	M. 12	" " " " " " " "	2 h.	"		"	41 d.	R. R. accident; scalp wounds.
11	Clark	July 13, 1861	Carpenter	M. 60	" " " " " " " "	2 h.	Flap		"	47 d.	
12	Gay	Sept. 3, 1861	Minor	F. 11	" " " " " " " "	3 h.	Circular		"	80 d.	" amp. of fingers; resection of end of bone
13	J. M. Warren	April 8, 1862	Moulder	M. 21	" " " " " " " "	2 h.	"		"	19 d.	Sloughing of flaps; death from pyæmia.
14	Cabot	Jan. 2, 1863	Washerwoman	F. 44	Comp. dislocation at " "	3 h.	"		Death	73 d.	
15	Hodges	July 14, 1863	Minor	M. 13	Comp. com. fract. of arm	2 h.	Flap		Recovery	41 d.	Bullet wound.
16	Clark	Aug. 8, 1863	Plumber	M. 28	" " " " " " " "	3 h.	"		"	18 d.	Union by first intention.
17	Gay	Aug. 15, 1863	Minor	F. 3	" " " " " " " "	3 h.	Circular		"	28 d.	R. R. accident.
18	"	Sept. 2, 1863	Servant	M. 21	" " " " " " " "	8 h.	"		"	31 d.	Gunshot wound.
19	"	Sept. 2, 1863	Minor	M. 21	" " " " " " " "	2 h.	"		"	22 d.	
20	Hodges	Nov. 26, 1863	Minor	M. 14	" " " " " " " "	2 h.	"		"	19 d.	
21	Cabot	Nov. 28, 1863	Baker	M. 16	Laceration of arm	3 h.	Flap		"	60 d.	
22	Clark	Dec. 3, 1863	Farmer	M. 57	Comp. com. fract. of elbow	2 h.	Circular		"	23 d.	
23	Hodges	Sept. 12, 1864	Laborer	M. 56	" " " " " " " "	2 h.	"		Death	69 d.	R. R. accident; acute pericarditis.
24	Cabot	Dec. 10, 1864	"	M. 21	" " " " " " " "	2 h.	"		Recovery	2 d.	" ampu. of leg; d. from collapse.
25	Bigelow	Dec. 8, 1864	Brakeman	M. 35	" " " " " " " "	9 h.	Flap		Recovery	69 d.	
26	J. M. Warren	Dec. 20, 1867	Operative	M. 38	" " " " " " " "	4 h.	Circular		Death	28 d.	Amp. of other forearm; death from pyæmia.
27	Gay	Oct. 29, 1867	Mechanic	M. 23	" " " " " " " "	4 h.	Flap		Recovery	41 d.	Resection of end of bone six mos. later.
28	Cabot	Jan. 11, 1868	Minor	M. 11	" " " " " " " "	2 h.	"		"	15 d.	
29	Hodges	Oct. 16, 1868	Laborer	M. 29	" " " " " " " "	2 h.	"		"	91 d.	Comp. com. fract. of fibula; secondary hæmorr.
30	Coolidge	April 9, 1869	Clerk	M. 62	" " " " " " " "	2 h.	"		"	34 d.	Delirium tremens, d. from pyæmia.
31	Hodges	July 22, 1869	Carpenter	M. 35	" " " " " " " "	12 h.	"		"	21 d.	R. R. accident; disl. hip; hosp. gang; pleuritis.
32	Bigelow	Feb. 7, 1870	Fireman	M. 55	" " " " " " " "	4 h.	"		Recovery	28 d.	Erysipelas.
33	Hodges	May 2, 1870	Painter	M. 21	" " " " " " " "	3 h.	"		"	20 d.	
34	"	May 11, 1870	Painter	M. 17	" " " " " " " "	3 h.	Circular		"	28 d.	Erysipelas.
35	Clark	May 31, 1870	Laborer	M. 24	" " " " " " " "	5 h.	Flap		"	43 d.	
36	Cabot	Dec. 20, 1870	Minor	M. 15	Laceration of forearm		Circular		"		
	Clark	April 5, 1871	Laborer	M. 54	Comp. com. fract. of arm	5 h.	Flap		"		

Recovered, 29 Deaths from Exhaustion, 3
Died, 7—Total, 36. " Pyæmia, 3
Ratio of mortality, 19·44 per cent. " Collapse, 1

R. R. accidents 8, of which 5 were fatal.

AMPUTATIONS OF ARM.—TRAUMATIC—SECONDARY.

R. R. accident 1, which was fatal.

AMPUTATIONS OF ARM.—PATHOLOGICAL.

Ulcers	3 cases.	Caries	1 case.	Conical stump	1
Anchylolosis	2	Burn	1	Neuromata	1
Necrosis	1	Unu. fract.	1		

Deaths from Exhaustion,	3
“ Pyæmia,	1

Recovered, 28
Died, 4—Total, 32.
Ratio of mortality, 12.50.

Table 6.

AMPUTATIONS OF FOREARM.—TRAUMATIC—PRIMARY.										
No.	Operator.	Date.	Occupation.	Sex and Age.	Nature of Injury.	Duration.	Amputation. Method. Place.	Result.	Length of Time.	Details.
1	Hayward	April 12, 1838	Blacksmith	M. 23	Comp. com. fract. of hand	3 h.	Circular	Recovery	49 d.	Caught in gear-wheel of steam engine.
2	Townsend	Mar. 22, 1839	Joiner	M. 17	" " " "	3 h.	"	"	31 d.	Planing machine.
3	J. C. Warren	May 12, 1849	Laborer	M. 37	" " both " of wrist	7 h.	Flap	"	71 d.	R. R. accident; carpo-metacarpal amp. of r. hand.
4	Townsend	May 17, 1850	Minor	M. 15	" " " "	2 h.	Circular	"	77 d.	Fracture and depression of skull, &c.
5	J. M. Warren	Nov. 6, 1852	Laborer	M. 24	Laceration of forearm	5 h.	Flap	Death	3½ h.	D. from chloroform adm. for ether by mistake.
6	Clark	May 5, 1854	Minor	M. 6	Comp. com. fract. of hand	2 h.	"	Recovery	21 d.	Hand mangled by circular saw.
7	"	May 9, 1855	Laborer	M. 26	" " " "	2 h.	"	"	52 d.	Premature explosion while blasting.
8	"	May 24, 1855	Mechanic	M. 36	" " " "	1½ h.	Circular	"	37 d.	Caught between band and roller of machine.
9	Townsend	Oct. 8, 1855	Mechanic	M. 30	" " " "	2 h.	"	"	52 d.	Caught in gearing of machine; secondary hæmor.
10	Bigelow	Nov. 8, 1855	Farmer	M. 19	" " " "	3 h.	Flap	"	32 d.	Explosion of gun.
11	Gay	Aug. 29, 1856	Mechanic	M. 21	" " " "	7 h.	Circular	"	73 d.	Caught between rollers of machine.
12	Cabot	Feb. 21, 1857	Farmer	M. 21	" " " "	5 h.	"	"	43 d.	Premature explosion while blasting.
13	Townsend	July 4, 1857	Laborer	M. 23	" " " "	2½ h.	"	Death	3 d.	Explo. of gun; punct. of abd.; d. fr. peritonitis.
14	Gay	July 4, 1859	"	M. 45	" " " "	2 h.	"	Recovery	44 d.	Gunpowder explosion; delirium tremens.
15	Bigelow	Nov. 9, 1861	"	M. 36	" " both " of " "	2 h.	"	Death	6 d.	R. R. accident; alcoholic habit.
16	Clark	July 1, 1863	"	M. 32	" " " "	12 h.	Flap	"	22 d.	" " intoxicated on entrance.
17	Hodges	July 29, 1864	"	M. 50	" " " "	2 h.	"	Recovery	45 d.	" " " "
18	"	Aug. 6, 1864	Machinist	M. 27	" " " "	4 h.	Circular	"	35 d.	Erysipelas.
19	Bigelow	Jan. 21, 1865	Laborer	M. 25	" " " "	2 h.	"	Death	16 d.	R. R. accident; secondary hæmorrhage.
20	Gay	Aug. 24, 1867	Leather-splitter	M. 33	" " " "	2 h.	"	Recovery	68 d.	Caught between cylinders.
21	Cabot	Jan. 20, 1868	Brakeman	M. 24	" " " "	9 h.	Flap	"	72 d.	R. R. accident; erysipelas; abscesses in leg.
22	Coolidge	April 28, 1868	Music teacher	F. 17	" " " "	3 h.	Circular	"	54 d.	" " " "
23	Clark	June 25, 1868	Laborer	M. 43	" " " "	4 h.	"	"	35 d.	Premature explosion while blasting.
24	"	April 2, 1869	Shoemaker	M. 8	" " " "	2 h.	Flap	"	40 d.	Hands crushed by heel stamper.
25	Coolidge	June 10, 1869	Minor	M. 5	" " " "	3 h.	Circular	Death	19 d.	Double amputation; convulsions.
26	Clark	April 12, 1870	Mechanic	M. 33	" " " "	4 h.	Flap	Recovery	18 d.	Hand caught in moulding machine.
27	Coolidge	Oct. 10, 1870	Minor	M. 16	" " " "	2 h.	"	"	15 d.	Gunshot wound.
28	Hodges	Jan. 7, 1871	Stone mason	M. 21	" " " "	2 h.	"	"	65 d.	R. R. accident; amp. of five toes and one finger.
29	Cabot	Jan. 26, 1871	Wool-carder	M. 45	" " " "	4 h.	Circular	Death	6 d.	Delirium tremens; erysipelas.

Recovered, 22; Died, 7—Total, 29. Ratio of mortality, 24·13 per cent. Deaths from Exhaustion, 5; Peritonitis, 1; Chloroform, 1. R. R. accidents 8, of which 3 were fatal.

Table 7.

No.	Operator.	Date.	Occupation.	Sex and Age.	Nature of Injury.	Duration.	Amputation.		Result.	Length of Time.	Details.
							Method.	Place.			
1	Hayward	June 27, 1834	Innkeeper	M. 25	Laceration of hands	7 d.	Circular		Death	2 d.	Gunpowder explosion; face burned; del. tremens.
2	J. C. Warren	April 3, 1836	Laborer	M. 29	Comp. com. fract. of hand	5 d.	"		Recovery	35 d.	Explosion of shot gun.
3	Bigelow	Feb. 22, 1854	Mechanic	M. 51	" dislocation of wrist	11 d.	"		"	28 d.	Drawbridge fell upon hand.
4	"	Dec. 30, 1854	Seaman	M. 24	Hand burnt and crushed	36 d.	"		"	52 d.	
5	"	Jan. 20, 1855	Domestic	F. 50	Comp. fract. of radius	14 d.	"		"	28 d.	Fell twelve feet down embankment.
6	Clark	May 17, 1861	Stone-cutter	M. 22	" com. fract. of wrist	40 d.	Flap		"	14 d.	Bullet wound; delirium tremens; erysipelas.
7	Gay	June 18, 1862	Baker	M. 21	Contusion of forearm	4 mo.	Circular		"	116 d.	Several secondary hæmorrhages.
8	Bigelow	Nov. 26, 1863	Lieutenant	M. 24	Comp. com. fract. of forearm	28 d.	"		Death	31 d.	Bullet wound; d. from pyæmia (?)
9	Cabot	April 26, 1864	Shoemaker	M. 24	" " " "	20 d.	Flap		Recovery	60 d.	Explosion of shot gun.
10	Hodges	April 18, 1865	Cracker-maker	M. 14	" " " "	3 d.	"		"	40 d.	Hand crushed in kneading machine.
11	Bigelow	Dec. 28, 1869	Laborer	M. 50	Contusion of hand	3 mo.	Circular		"	27 d.	" " between carts.
12	Hodges	April 16, 1870	Carpenter	M. 63	Comp. com. fract. of forearm	42 d.	Flap		"	22 d.	Comp. fract. of same arm in elbow-joint.

Recovered, 10; Died, 2—Total, 12. Ratio of mortality, 16·66 per cent. Deaths from Exhaustion, 1; Pyæmia, 1.

AMPUTATIONS AT THE

Table 8. AMPUTATIONS OF FOREARM.—PATHOLOGICAL.

No.	Operator.	Date.	Occupation.	Sex and Age.	Disease.	Duration.	Amputation. Method.	Place.	Result.	Length of Time.	Details.
1	J. C. Warren	Nov. 8, 1834	Minor	F. 14	Necrosis of carpus	18 mo.	Circular		Recovery	18 d.	Kicked by a cow.
2	Townsend	Aug. 6, 1839	Ship-joiner	M. 72	Ulcer of hand	1 y.	"		"	20 d.	After treatment of small tumor by empiric.
3	"	Mar. 14, 1842	Farmer	M. 56	Tumor of hand	30 y.	"		"	14 d.	Osteo-sarcoma; not fully healed.
4	"	May 4, 1843	Shoemaker	M. 14	Necrosis of carpus	10 mo.	"		"	25 d.	" Malignant" erysipelas.
5	Hayward	Dec. 15, 1848	Housewife	F. 26	Tumor of hand	12 y.	"		"	24 d.	Wrist jammed.
6	Bigelow	Jan. 30, 1855	Farmer	M. 47	Necrosis of carpus	3 y.	"		"	20 d.	" Scrofulous."
7	Clark	April 2, 1856	Mechanic	M. 25	"	2 y.	"		"	25 d.	" Cancer."
8	Townsend	Aug. 21, 1858	Dress maker	F. 31	Tumor of wrist	5 mo.	Flap	wt. jt.	"	23 d.	Window fell upon wrist.
9	Cabot	July 31, 1858	Book-agent	F. 36	Caries of carpus	2 y.	"		"	52 d.	After vaccination; reamp. 2 y. for recurrence.
10	Clark	Mar. 29, 1859	Laborer	M. 30	Necrosis of "	6 mo.	"		"	51 d.	Originating in sprain.
11	Bigelow	Dec. 1, 1859	Minor	M. 5	Tumor of hand	4 y.	Circular		"	59 d.	Erysipelas.
12	"	Jan. 19, 1861	Laborer	M. 36	Chronic dis. of wrist-joint	1 y.	"		"	13 d.	Enchondroma.
13	Cabot	Sept. 24, 1861	Machinist	M. 63	Necrosis of carpus	3 y.	"		"	76 d.	Epithelial; sloughing of flaps.
14	Bigelow	April 11, 1862	Spinster	F. 24	Tumor of forearm	4½ y.	"		"	58 d.	Following burns; erysipelas.
15	Townsend	Aug. 8, 1862	Shoemaker	M. 72	" " hand	3 y.	"		"	23 d.	" Cancer."
16	Cabot	Oct. 3, 1862	Laborer	M. 40	Ulcers of forearm	4 mo.	"		"	91 d.	Extensive sloughing of flaps.
17	"	Dec. 20, 1862	Weaver	M. 50	Tumor of wrist	40 y.	"		"	88 d.	Albuminuria; secondary hæmorrhages; erysip.
18	J. M. Warren	Feb. 11, 1863	Laborer	M. 23	Abscess of hand	2 mo.	"		"	37 d.	Slight sloughing of flaps.
19	Bigelow	Feb. 12, 1863	Carpenter	M. 52	Necrosis of carpus	9 mo.	"		"	34 d.	Following penknife wound of wrist.
20	Cabot	Feb. 28, 1863	Fruit-dealer	M. 30	"	6 mo.	Flap		Recovery	21 d.	Pickaxe wound of hand.
21	J. M. Warren	Mar. 23, 1863	Carpenter	M. 62	"	4 mo.	Circular		Death	42 d.	Death from pyæmia, as shown at autopsy.
22	"	May 2, 1865	Laborer	M. 62	"	2 y.	"		Recovery	29 d.	Primary amp. of hand for horns of 27 y. duration.
23	Clark	May 13, 1865	"	M. 48	" " metacarpus	1 y.	"		"	34 d.	Bullet wound of wrist.
24	Cabot	Dec. 18, 1865	Cook	M. 53	Abscess of hand	7 wk.	Flap		Death		
25	Hodges	Sept. 21, 1867	Fisherman	M. 58	"	6 wk.	Circular		Recovery		
26	"	April 12, 1871	Clerk	M. 32	Tumor of stump	1½ y.	Flap		"		
27	Clark	April 15, 1871	Sempstress	F. 47	Caries of carpus	9 mo.	"		"		

Recovered, 23
Died, 4—Total, 27
Ratio of mortality, 14.81 per cent.

Deaths from Exhaustion, 3
" Pyæmia, 1

Causes of Amputation were Necrosis in 11 cases.
Tumors 8
Abscesses 3
Ulcers 2
Caries 2
Chr. dis. of joint 1

Table 9.

AMPUTATIONS AT HIP-JOINT.—TRAUMATIC—PRIMARY AND PATHOLOGICAL.

No.	Operator.	Date.	Occupation.	Sex and Age.	Injury or Disease.	Duration.	Amputation. Method.	Result.	Length of Time.	Details.
1	J. M. Warren	June 19, 1858	Minor	M. ch.	Comp. fract. of thigh	1 h.	Flap	Death	13 d.	Extensive laceration of hip; d. from exhaustion.
2	"	Mar. 23, 1859	Shoemaker	M. 17	Tumor of thigh	7 mo.	"	Recovery	42 d.	Osteo-sarcoma.
3	Hodges	May 29, 1868	Clerk	M. 31	" " stump	5 mo.	"	"	60 d.	" not fully healed; return of disease in stump and in left breast two yrs. later.

1 Traumatic—Primary amp. with fatal result.

2 Pathological (Tumors) " favorable result.

1 death from Exhaustion.

Table 10:

AMPUTATIONS OF THIGH.—TRAUMATIC—PRIMARY.

No.	Operator.	Date.	Occupation.	Sex and Age.	Nature of Injury.	Dura- tion.	Amputation. Method. Place.	Result.	Length of Time.	Details.
1	J. C. Warren	May 30, 1829	Painter	M. 23	Comp. com. fract. of leg	20 h.	Circular	Death	49 d.	Delirium; pus in wrist and hip joint.
2	Hayward	June 28, 1831	Minor	M. 10	" " " thigh	12 h.	Flap	Recovery	125 d.	Sloughing of flaps; stump sound in 1852.
3	J. C. Warren	June 2, 1836	Laborer	M. 31	" " both "	2 h.	Fl. & Cir.	Death	9 h.	R. R. accident; double amp.; d. from collapse.
4	Hayward	Sept. 24, 1837	"	M. 39	Comp. fract. of leg	18 h.	Circular	"	6 h.	Died from collapse.
5	J. C. Warren	Nov. 5, 1838	Painter	M. 27	Comp. com. fract. of leg	6 h.	"	Recovery	135 d.	
6	"	Mar. 6, 1845	Laborer	M. 53	" " " "	21 h.	Flap	"	116 d.	R. R. accident; great loss of blood before op.
7	J. M. Warren	April 6, 1847	"	M. 30	" " " knee	17 h.	Circular	Death	2 d.	Laceration of scalp; del. trem.; d. fr. collapse.
8	"	Mar. 31, 1848	Brakeman	M. 20	" " " leg	8½ h.	Flap	Recovery	38 d.	R. R. accident; toe on other foot crushed.
9	"	April 7, 1848	Artist	M. 33	" " " "	13 h.	"	Death	5 d.	" " extensive scalp-wound; d. fr. coll.
10	Parkman	Nov. 17, 1848	Teamster	M. 36	Lacer. thigh & rup. fem. art.	16 h.	Circular	Recovery	141 d.	Sloughing of flaps; resection of end of femur.
11	J. M. Warren	April 2, 1849	Mechanic	M. 40	Comp. com. fract. of leg	6 h.	"	Death	1 h.	Death from shock.
12	Parkman	June 19, 1849	Engineer	M. 39	" " " thigh	4 h.	Flap	"	5 h.	R. R. accident; amp. of other leg; d. fr. collapse.
13	Bigelow	Dec. 15, 1849	Laborer	M. 21	" " " "	2½ h.	Circular	Recovery	48 d.	" " "
14	Townsend	Aug. 8, 1851	Mechanic	M. 35	" " " leg	3 h.	"	"	77 d.	Sloughing of flaps; contusion about knee.
15	Bigelow	Nov. 3, 1851	Seaman	M. 84	" " " "	"	"	Death	1 d.	R. R. accident; amp. of other leg; d. fr. collapse.
16	J. M. Warren	April 10, 1852	Mechanic	M. 25	" " " thigh	3 h.	"	Recovery	67 d.	Cystitis from enlarged prostate gland.
17	Parkman	July 1, 1852	Laborer	M. 30	" " " leg	1 h.	"	"	29 d.	
18	J. M. Warren	Sept. 8, 1852	Seaman	M. 22	" " " thigh	12 h.	"	"	59 d.	
19	"	Nov. 27, 1852	Laundress	F. 22	" " " leg	3 h.	Flap	Relieved	46 d.	Sloughing of flaps; feeble when discharged.
20	Bigelow	Feb. 1, 1854	Laborer	M. 33	Comp. dislocation at knee	2½ h.	"	Recovery	71 d.	Fracture of jaw and ulna; erysipelas.
21	Clark	May 29, 1854	"	M. 22	Comp. com. fract. of thigh	1 h.	Circular	Death	19 d.	
22	"	June 19, 1854	Minor	M. 4	Laceration of thigh and leg	2 h.	Flap	Recovery	57 d.	R. R. accident; delirium tremens.
23	Townsend	July 3, 1855	Laborer	M. 30	Comp. com. fract. of leg	1½ h.	Circular	Death	26 d.	Secondary hemorrhage; gangrene.
24	Gay	Sept. 19, 1855	Mechanic	M. 45	" " " thigh	7 h.	"	"	8 d.	
25	"	Oct. 2, 1855	"	M. 20	" " " leg	7 h.	Flap	Recovery	159 d.	
26	Townsend	Oct. 8, 1855	"	M. 25	" " " "	5 h.	Circular	"	305 d.	R. R. accident; pneum.; resect. of end of femur.
27	Clark	June 21, 1856	Laborer	M. 38	" " " "	2 h.	Flap	"	126 d.	" " " [d. from shock.
28	Gay	Aug. 11, 1856	Minor	M. 4	" " " "	2 h.	Circular	Death	½ h.	" " laceration of buttock and scalp;
29	Townsend	Sept. 11, 1856	Brakeman	M. 23	" " " thigh	20 h.	"	Recovery	124 d.	" " epilepsy. (?)
30	Bigelow	Dec. 1, 1856	Widow	F. 42	" " " "	3 h.	"	"	195 d.	" " obstinate vomiting.
31	Gay	Mar. 2, 1857	Carpenter	M. 28	" " " leg	15 h.	"	"	140 d.	" " [after op.
32	Townsend	Aug. 30, 1858	Minor	M. 6	" " " "	2 h.	"	"	61 d.	" " convulsions & stupor for 3 days
33	Gay	Sept. 9, 1858	Seaman	M. 36	" " " thigh	12 h.	"	Death	1 d.	Delirium tremens; d. from collapse.
34	"	Sept. 21, 1858	Minor	F. 10	" " " leg	2 h.	"	Recovery	39 d.	R. R. accident.
35	"	Dec. 9, 1858	"	M. 11	" " " "	1 h.	"	"	134 d.	" " erysipelas.
36	Clark	May 5, 1859	Rigger	M. 32	" " " thigh	"	"	Death	1 d.	Fracture of elbow; delirium; d. from collapse.
37	"	June 21, 1859	Teamster	M. 34	" " " knee	24 h.	"	"	22 d.	Erysipelas; delirium.
38	Gay	Oct. 10, 1859	Brewer	M. 32	" " " leg	2 h.	"	Recovery	186 d.	R. R. accident; resection of the end of femur.
39	Bigelow	Dec. 8, 1859	Brakeman	M. 39	" " " "	3 h.	"	"	129 d.	"
40	Townsend	Sept. 5, 1860	Laborer	M. 51	" " " "	2 h.	"	"	46 d.	"
41	Bigelow	Jan. 29, 1861	Inspector	M. 40	" " " "	2½ h.	"	"	42 d.	"
42	Clark	April 27, 1861	Minor	M. 24	" " " "	1½ h.	Flap	Death	1 d.	"
43	Gay	Oct. 21, 1861	Laborer	M. 21	" " " thigh	2 h.	Circular	Recovery	190 d.	" " d. from collapse.
44	J. M. Warren	June 6, 1862	"	M. 40	" " " leg	2 h.	Flap	"	91 d.	" " laceration of other leg.
45	"	July 9, 1862	Minor	M. 10	" " " "	2 h.	"	"	40 d.	" " secondary hemorrhage; del. trem.
46	"	June 20, 1863	Err. and-boy	M. 16	" " " "	2 h.	Circular	Death	10 h.	Double amputation; d. from collapse.
47	Hodges	July 11, 1863	Minor	M. 5	" " of leg	2½ h.	"	"	11 d.	Lisfranc's amp. of other foot.
48	"	Sept. 21, 1863	Laborer	M. 32	" " " knee	2½ h.	"	Recovery	94 d.	R. R. accident; comp. com. fract. of other ankle.
49	J. M. Warren	April 9, 1864	Driver	M. 38	" " " leg	2½ h.	"	Death	3 d.	" " obstinate vomiting.

Table 10 (concluded.) AMPUTATIONS OF THIGH.—TRAUMATIC—PRIMARY.

No.	Operator.	Date.	Occupation.	Sex and Age.	Nature of Injury.	Duration.	Amputation. Method. Place.	Result.	Length of Time.	Details.
50	J. M. Warren	June 2, 1864	Seaman	M. 24	Comp. com. frac. of both legs	2 h.	Circular	Death	23 d.	Double amputation.
51	Hodges	April 18, 1865	Minor	F. 2	" " " leg	1½ h.	"	Recovery	28 d.	R. R. accident.
52	"	July 23, 1865	"	M. 13	" " " "	2 h.	"	Death	16 d.	D. from tetanus.
53	Cabot	Dec. 6, 1865	Brakeman	M. 21	" " " "	20 h.	Flap	Recovery	25 d.	R. R. accident.
54	Hodges	Oct. 17, 1867	"	M. 38	" " " "	2 h.	"	"	72 d.	" amp. of other foot.
55	"	Oct. 6, 1869	Laborer	M. 50	Laceration of thigh	4 h.	Circular	Death	5 d.	Pulmonary complication; d. from pyæmia.
56	Gay	July 18, 1870	Minor	M. 9	Comp. com. frac. of leg	2 h.	"	Recovery	86 d.	Resection of end of femur.
57	Coolidge	July 23, 1870	Swiss	M. 40	Knee joint opened	1 h.	Flap	Death	2 h.	R. R. accident; exten. lac. of thigh; d. fr. shock.
58	Hodges	Aug. 17, 1870	Tailor	M. 30	Comp. com. frac. of leg	2 h.	Circular	"	39 d.	Fract. of other ankle; d. from pyæmia.
59	Bigelow	Nov. 22, 1870	Minor	M. 11	" " both knees	4 h.	"	"	15 h.	R. R. accident; double amp.; d. from shock.
65	Cabot	Jan. 20, 1871	"	M. 13	" " thigh	3 h.	Flap	Recovery	57 d.	Not fully healed; resection of end of femur.
Recovered, 34					Deaths from Collapse,	10	R. R. accidents, 27, of which 8 were fatal.			
Died, 25					" Exhaustion,	8				
Relieved, 1—Total, 60					" Shock,	4				
Ratio of mortality, 42·37 per cent.					" Pyæmia,	2				
					" Tetanus,	1				

Table 11. AMPUTATIONS OF THIGH.—TRAUMATIC—SECONDARY.

No.	Operator.	Date.	Occupation.	Sex and Age.	Nature of Injury.	Duration.	Amputation. Method. Place.	Result.	Length of Time.	Details.
1	J. C. Warren	Nov. 19, 1824	Boatman	M. 30	Comp. frac. of leg	15 d.	Flap	Death	12 h.	D. from tetanus, developed before operation.
2	"	Nov. 18, 1828	"	M. 17	Lacer. of leg into knee-joint	25 h.	"	Recovery	37 d.	Premature explosion while blasting.
3	Townsend	Aug. 7, 1845	Laborer	M. 21	Comp. com. frac. of leg	3 mo.	Circular	Death	63 d.	Delirium tremens; erysipelas.
4	J. M. Warren	Jan. 30, 1851	"	M. 21	" " " "	47 d.	"	Recovery	23 d.	General anasarca.
5	Clark	Nov. 21, 1851	Minor	M. 12	Laceration of leg	121 d.	"	Death	52 d.	Bed sores; erysipelas.
6	Parkman	July 13, 1852	Mechanic	M. 24	Comp. frac. of leg	42 d.	"	"	28 d.	R. R. accident; thoracic complications.
7	Gay	Oct. 15, 1857	"	M. 51	Comp. com. frac. of leg	39 h.	"	Recovery	23 d.	Delirium tremens.
8	J. M. Warren	April 11, 1857	Stevedore	M. 51	" " " "	2 mo.	"	"	42 d.	Dislocation of shoulder also.
9	Bigelow	Jan. 3, 1859	Laborer	M. 48	" " " "	53 d.	"	Death	119 d.	Delirium tremens; fract. of 4 ribs.
10	"	Nov. 20, 1861	"	M. 45	Comp. frac. ank. & lac. thigh	10 d.	"	"	6 d.	Delirium tremens; fract. of 4 ribs.
11	Hodges	July 16, 1863	Lieutenant	M. 28	Comp. frac. of knee	16 d.	"	Recovery	6 d.	Bullet wound; d. from pyæmia. (?)
12	"	Oct. 15, 1864	Laborer	M. 29	Commin. frac. of leg	4 d.	"	Death	155 d.	R. R. accident; phlebitis; diffuse cellular inflam.
13	J. M. Warren	Mar. 30, 1865	Teamster	M. 56	Fracture of leg	27 d.	"	"	3 d.	Epilepsy; at aut. enceph. tumors found in brain &
14	"	May 19, 1865	Laborer	M. 57	Comp. com. frac. of leg	2½ d.	"	Death	7 d.	R. R. accident; secondary hæmorrh. [both lungs.
15	Hodges	Sept. 15, 1866	Trader	M. 28	Bullet in knee	18 d.	Flap	"	4 d.	Bullet wound of buttock; fract. of pelvis.
Recovered, 6					Deaths from Exhaustion,	6	R. R. accidents, 3, of which 2 were fatal.			
Died, 9—Total, 15					" Tetanus,	1				
Ratio of mortality, 60 per cent.					" Enceph. growth in brain,	1				
					" Pyæmia,	1				

Table 12.

AMPUTATIONS OF THIGH.—PATHOLOGICAL.

No.	Operator.	Date.	Occupation.	Sex and Age.	Disease.	Duration.	Amputation. Method. Place.	Result.	Length of Time.	Details.
1	J. C. Warren	Nov. 13, 1823		F. 42	Chronic disease of knee joint	5 mo.	Circular	Recovery	223 d.	Secondary hæmorrhage.
2	"	Mar. 25, 1824		M. 16	Deformity of knee	7 y.	Flap	"	35 d.	Venesection ad xii. oz.
3	"	May 29, 1824		M. 18	Chronic disease of knee-joint	18 mo.	"	Death	3 d.	Obstinate vomiting.
4	"	Dec. 9, 1826		M. 21	"	3 y.	"	Recovery	65 d.	Secondary hæmorrhage.
5	"	May 9, 1827		M. 21	Ulcers on legs	4 mo.	Circular	"	73 d.	
6	"	Dec. 8, 1827		M. 21	Chronic disease of knee-joint	3 mo.	Flap	Relieved	5 d.	
7	"	May 9, 1828	Shoemaker	M. 23	"	10 y.	Circular	Death	40 d.	Great hæmorrhage during op. D. fr. exhaustion.
8	"	Dec. 6, 1828		M. 24	Deformity of knee	16 y.	Flap	Recovery	39 d.	Deformity caused by dislocation of patella.
9	"	Dec. 5, 1829	Servant	M. 12	Chronic disease of knee-joint	8 mo.	Circular	"	103 d.	
10	"	Dec. 27, 1830	Shoemaker	M. 23	"	3 y.	Flap	Death	180 d.	Night sweats. D. fr. exhaustion.
11	"	Jan. 2, 1832		M. 13	"	7 y.	Circular	Recovery	49 d.	
12	Hayward	April 12, 1832	Cooper	M. 26	"	6 y.	"	"	92 d.	Secondary hæmorrhage.
13	J. C. Warren	Nov. 24, 1832		F. 27	"	23 y.	Flap	"	51 d.	Venesection ad xiv. oz.
14	"	Aug. 28, 1832		M. 21	"	3 mo.	Circular	"	65 d.	Secondary hæmorrhage.
15	"	Sept. 26, 1832	Grocer	M. 37	Necrosis of tibia	20 y.	Flap	"	63 d.	
16	"	Jan. 11, 1833	Domestic	F. 21	Chronic disease of knee-joint	5 y.	Flap	"	70 d.	
17	Hayward	May 8, 1833	Mechanic	M. 26	"	4 y.	Circular	"	56 d.	
18	J. C. Warren	Dec. 28, 1833	Spinster	F. 23	"	4½ y.	"	"	53 d.	[opped before op.
19	"	Jan. 11, 1834	Farmer	M. 35	Tumor of leg	2½ y.	"	Death	7 d.	Tumor removed previously. D. fr. pyæmia developed before op.
20	"	Dec. 4, 1835	Minor	F. 13	Chronic disease of knee-joint	1 y.	"	Recovery	162 d.	Resection of end of femur.
21	J. C. Warren	Dec. 16, 1836	Tailoress	F. 24	Necrosis of femur	13 y.	Flap	Recovery	27 d.	
22	Hayward	June 10, 1837	Carpenter	M. 27	Chronic disease of knee-joint	4 y.	Circular	"	39 d.	
23	"	Nov. 4, 1837	Med. student	M. 22	"	5 y.	"	"	44 d.	Rheumatism.
24	Townsend	May 25, 1839	Farmer	M. 37	Ulcer of leg	24 y.	"	"	58 d.	[morrhage, &c.
25	Hayward	Mar. 16, 1842	Laborer	M. 23	Necrosis of femur	5 y.	"	Death	2 h.	Alcoholic habit. D. fr. exhaustion caused by hæ-
26	"	Nov. 16, 1842	Machinist	M. 34	Ulcers of leg	4 y.	"	Recovery	47 d.	
27	"	Oct. 14, 1843	Tailor	M. 19	Chronic disease of knee-joint	13 y.	"	"	40 d.	Secondary hæmorrhage.
28	J. C. Warren	Nov. 7, 1844	Minor	F. 17	"	3½ mo.	Flap	Death	27 d.	D. fr. exhaustion. [art.
29	"	Nov. 17, 1845	Packer	M. 30	"	5 y.	"	Recovery	66 d.	Secondary hæmorrhages requiring ligation of fem.
30	Townsend	Aug. 5, 1845	Laborer	M. 24	"	2 y.	"	"	70 d.	
31	J. C. Warren	Nov. 8, 1845	Sailor	M. 21	"	3 w.	"	"	48 d.	Thigh caught in coil of rope.
32	"	Dec. 27, 1845	Minor	M. 19	Gangrene of leg	6 y.	"	"	24 d.	
33	"	May 23, 1846	"	M. 12	Deformity and ulcer of leg	3 y.	"	Death	1 d.	Secondary hæmorrhage.
34	Hayward	May 31, 1847	Domestic	F. 21	Chronic disease of knee-joint	1½ y.	Flap	Recovery	46 d.	First patient to whom ether was administered for
35	Townsend	July 12, 1847	Physician	M. 60	"	50 y.	Circular	Death	29 d.	Phlebitis and embolism shown at autopsy.
36	J. M. Warren	Aug. 27, 1847	Carver	M. 39	Necrosis of leg	9 mo.	Flap	Removed	11 d.	
37	J. C. Warren	Sept. 1, 1847	Mechanic	M. 25	Deformity from injury	2 y.	"	Recovery	51 d.	
38	Hayward	Nov. 27, 1847	Laborer	M. 34	Tumor of leg	2 y.	"	Death	6 d.	Much reduced before op. by suppuration. [rism.
39	Parkman	Feb. 3, 1848	Seaman	M. 23	Chronic disease of knee-joint	3 w.	"	Recovery	208 d.	Following ligation of fem. artery for traum. aneu-
40	J. C. Warren	June 7, 1848	Shoemaker	M. 22	Gangrene of leg	4 mo.	Circular	"	35 d.	Inguinal glands inflamed.
41	Townsend	Mar. 31, 1849	Shoemaker	M. 23	Chronic disease of knee-joint	2 y.	Flap	Recovery	81 d.	
42	J. M. Warren	May 9, 1849	Minor	M. 11	"	13 y.	"	"	39 d.	
43	"	Sept. 4, 1849	Clerk	M. 44	Necrosis of femur	15 y.	"	"	87 d.	Erysipelas. Resection of end of femur.
44	Parkman	Sept. 8, 1849	Shoemaker	M. 22	Tumor of fibula	1 y.	Circular	"	60 d.	Nearly whole of fibula absorbed, encephaloid.
45	Townsend	Oct. 17, 1849	Merchant	M. 33	Chronic disease of knee-joint	3 y.	"	"	94 d.	Fractured patella.
46	J. M. Warren	Oct. 28, 1849	Trader	M. 48	Necrosis of femur	30 y.	"	"	281 d.	Great suppuration—resection of end of femur.
47	"	Feb. 3, 1850	Mechanic	M. 27	Tumor of patella	10 mo.	"	Death	60 d.	"Malignant." Great hæmorrhage. D. fr. pyæmia.
48	"	Mar. 20, 1850	Farmer	M. 54	Chronic disease of knee-joint	5 y.	"	Recovery	80 d.	
49	"		Spinster	F. 24	Deformity from cicatrix	1½ y.	Flap	Death	11 d.	Ulcers on thigh. D. fr. exhaustion.

AMPUTATIONS OF THIGH.—PATHOLOGICAL.

Table 12 (continued.)

No.	Operator.	Date.	Occupation.	Sex and Age.	Disease.	Duration.	Amputation. Method. Place.	Result.	Length of Time.	Details.
50	Townsend	Mar. 22, 1850	Minor	M. 12	Caries of femur	18 mo.	Circular	Recovery	39 d.	
51	Hayward	Oct. 10, 1850	Domestic	F. 26	Chronic disease of knee-joint	23 y.	Flap	"	99 d.	
52	J. M. Warren	Dec. 18, 1850	Mechanic	M. 52	Tumor of leg	9 w.	Circular	"	45 d.	Encephaloid.
53	Bigelow	Feb. 14, 1851	Laborer	M. 29	Ulcers of stump	2 y.	"	"	46 d.	Primary amputation for R. R. accident.
54	J. M. Warren	June 10, 1851	Mechanic	M. 43	Tumor of knee	2 y.	"	"	27 d.	D. fr. pyæmia, as shown at autopsy.
55	Bigelow	Dec. 5, 1851	Laborer	M. 36	Chronic disease of knee-joint	25 y.	"	Death	56 d.	
56	J. M. Warren	June 26, 1852	Minor	M. 19	"	7 y.	"	Recovery	38 d.	
57	Parkman	Sept. 8, 1852	Mechanic	M. 22	"	16 mo.	"	Death	7 d.	At autopsy tubercles and abscesses found in lungs.
58	Townsend	Sept. 25, 1852	Currier	M. 59	Ulcers of leg	30 y.	"	Recovery	36 d.	Chronic Bright's disease. Great anasarca.
59	Parkman	Oct. 27, 1852	Housewife	F. 41	"	5 y.	"	"	38 h.	
60	J. M. Warren	April 19, 1852	Seaman	M. 21	Chronic disease of knee-joint	1½ y.	"	"	43 d.	
61	Clark	May 18, 1853	Sempstress	F. 24	"	19 y.	"	"	64 d.	
62	Bigelow	Nov. 28, 1853	Domestic	F. 40	"	30 y.	Circular	"	51 d.	Fatty degeneration of muscles.
63	Cabot	Feb. 18, 1854	Minor	F. 16	"	"	"	"	391 d.	Resection of end of femur.
64	J. M. Warren	Mar. 1, 1854	Clergyman	M. 54	Tumor of knee	8 mo.	"	"	34 d.	Fibro-plastic. Singultus.
65	Parkman	July 29, 1854	Laborer	M. 17	Chronic disease of knee-joint	1 y.	"	"	253 d.	Resection of end of femur. Obstinate vomiting.
66	Bigelow	Jan. 5, 1856	Farmer	M. 50	Necrosis of femur	40 y.	"	Death	66 d.	
67	Townsend	Aug. 8, 1856	Mechanic	M. 21	"	8 mo.	"	Recovery	81 d.	
68	"	Oct. 22, 1856	Laborer	M. 30	Chronic disease of knee-joint	2 y.	"	"	84 d.	
69	J. M. Warren	Feb. 4, 1857	Housewife	F. 40	"	3 y.	"	"	60 d.	Strumous diathesis.
70	Bigelow	Feb. 22, 1857	Domestic	F. 22	"	8 mo.	"	"	144 d.	
71	"	Feb. 25, 1857	Laborer	M. 45	"	5 mo.	"	"	3 d.	Transfusion. Great hæmorrhage. D. fr. collapse.
72	"	April 4, 1857	Shoemaker	M. 26	Ulcers of leg	23 y.	"	Recovery	33 d.	Hæmorrhage.
73	J. M. Warren	May 9, 1857	Sempstress	F. 27	Chronic disease of knee-joint	15 y.	"	"	50 d.	Phthisical.
74	Townsend	Aug. 8, 1857	Minor	F. 11	Tumor of leg	7 mo.	"	"	34 d.	Osteo-sarcoma. D. fr. return of dis. 6 mos. later.
75	"	Sept. 15, 1857	"	F. 15	Chronic disease of knee-joint	2 y.	"	"	45 d.	
76	Bigelow	Oct. 29, 1857	Domestic	F. 30	"	9 y.	"	"	100 d.	Sequestrum drawn fr. shaft of femur.
77	Townsend	Aug. 14, 1858	Minor	M. 15	Tumor of thigh	3 mo.	"	"	39 d.	Osteo-sarcoma.
78	Bigelow	Sept. 25, 1858	Stove-dealer	M. 21	Chronic disease of knee joint	3 y.	"	"	45 d.	Neuromata excised 7 years later.
79	Townsend	Oct. 20, 1858	Laborer	M. 25	"	7 y.	"	"	72 d.	Frysipelas.
80	Cabot	Nov. 5, 1858	Minor	M. 12	Necrosis of tibia	2½ y.	Flap	"	135 d.	Bronchitis. Tuberculosis.
81	"	Nov. 20, 1858	Currier	M. 30	Chronic disease of knee-joint	1 y.	Circular	"	63 d.	
82	Bigelow	Feb. 25, 1859	Paper-carrier	M. 40	"	2 y.	"	"	79 d.	"Cancer." Secondary hæmorrhage. D. fr. ex-
83	J. M. Warren	Mar. 30, 1859	Laborer	M. 23	Tumor of thigh	5 mo.	"	Death	17 d.	Myeloid. Resection of end of femur 4 mos. later.
84	"	May 11, 1859	Painter	M. 33	" fibula	18 mo.	"	Recovery	60 d.	
85	Clark	May 27, 1859	Shoecutter	M. 30	Necrosis of tibia	19 mo.	"	"	46 d.	
86	J. M. Warren	July 21, 1859	Minor	F. 8	"	2½ mo.	Flap	"	25 d.	"Osteoid cancer." Hæmorrhage.
87	Clark	Aug. 12, 1859	Farmer	M. 18	Tumor of femur	9 mo.	Circular	"	52 d.	At autopsy tubercles found in left lung.
88	Gay	Aug. 24, 1859	Laborer	M. 21	Necrosis of tibia	3 mo.	"	Death	7 d.	Extensive sloughing of flaps.
89	"	Sept. 22, 1859	Student	M. 20	Chronic disease of knee-joint	15 y.	"	Recovery	170 d.	
90	Townsend	Oct. 18, 1859	Marble-poli-sh'r	M. 26	Necrosis of tibia	10 mo.	"	"	71 d.	
91	J. M. Warren	Nov. 2, 1859	Cabinet-maker	M. 21	Tumor of leg	5 mo.	"	"	39 d.	
92	Bigelow	Nov. 14, 1859	Tanner	M. 50	Chronic disease of knee-joint	15 mo.	"	Relieved	81 d.	Strumous diathesis.
93	Cabot	Nov. 23, 1859	Housewife	F. 28	Tumor of leg	18 mo.	"	Death	45 d.	Growth reappearing in stump.
94	J. M. Warren	Nov. 30, 1859	Widow	F. 45	Chronic disease of knee-joint	2 y.	"	"	27 d.	Autopsy showed chr. Bright's dis. and pyæmia.
95	Bigelow	Jan. 12, 1860	L't-housekeeper	M. 26	Tumor of leg	1½ y.	"	"	23 d.	Jaundice. D. before reaching home.
96	"	Jan. 19, 1860	Housewife	F. 34	Chronic disease of knee-joint	14 y.	"	Recovery	55 d.	
97	J. M. Warren	Mar. 3, 1860	"	F. 23	Phlegmasia dolens	7 mo.	"	"	21 d.	Not fully healed. D. fr. phthisis 5 mos. later.
98	"	Mar. 22, 1860	"	F. 47	Necrosis of tibia	1 y.	"	"	30 d.	Resection of end of femur 1 mo. later.

Table 12 (continued.)

AMPUTATIONS OF THIGH.—PATHOLOGICAL.

No.	Operator.	Date.	Occupation.	Sex and Age.	Disease.	Dura- tion.	Amputation. Method. Place.	Result.	Length of Time.	Details.
99	Clark	May 2, 1860	Seaman	M. 31	Chronic disease of knee-joint	2 y.	Flap	Recovery	188 d.	Disease of spine also.
100	Gay	June 5, 1860	Machinist	M. 48	" "	4 y.	Circular	Death	2 d.	[cles in both lungs. Autopsy showed tuber-
101	"	July 9, 1860	Domestic	F. 19	Traumatic paralysis of leg	10 y.	"	Recovery	152 d.	Secondary hæmorrhage.
102	Townsend	Oct. 13, 1860	Widow	F. 43	Chronic disease of knee-joint	1 y.	"	"	103 d.	Hospital gangrene.
103	J. M. Warren	Mar. 19, 1861	Laborer	M. 53	" "	3 y.	Circular	Death	9 d.	Sloughing of flaps.
104	"	April 22, 1861	Domestic	F. 26	Excision of knee-joint	9 y.	Flap	Recovery	60 d.	Great prostration before op. D. fr. exhaustion
105	Bigelow	Nov. 7, 1861	"	F. 34	Painful stump of leg	10 mo.	Circular	"	82 d.	
106	J. M. Warren	Feb. 13, 1862	Cigar-maker	M. 26	" "	12 y.	"	"	70 d.	[artery.
107	Clark	April 16, 1862	Farmer	M. 19	Necrosis of femur	6 y.	Flap	"	81 d.	Secondary hæmorrhages necess. ligature of fem.
108	Townsend	July 14, 1862	Domestic	F. 21	Tumor of leg	15 mo.	Circular	"	48 d.	
109	Cabot	Nov. 26, 1862	Painter	M. 35	Necrosis of tibia	9 mo.	Flap	"	76 d.	Erysipelas.
110	Gay	Oct. 3, 1862	Laborer	M. 25	" " femur	1 y.	Circular	"	28 d.	
111	J. M. Warren	April 22, 1863	Operative	F. 23	" " tibia	2 y.	"	"	86 d.	
112	Clark	May 22, 1863	Nail-maker	M. 43	Chronic disease of knee-joint	5 y.	"	"	26 d.	
113	J. M. Warren	May 26, 1863	Minor	M. 19	Ankylosis at knee-joint	4 y.	"	"	59 d.	Scarlatina.
114	Bigelow	July 24, 1863	Farmer	M. 22	Caries of tibia	9 mo.	"	"	30 d.	
115	"	Nov. 2, 1863	Spinster	F. 22	Chronic disease of knee-joint	12 y.	"	"	58 d.	
116	"	Nov. 24, 1863	Farmer	M. 38	Necrosis of tibia	23 y.	"	"	55 d.	
117	J. M. Warren	Feb. 17, 1864	Trader	M. 27	" " femur	13 y.	Flap	"	93 d.	Secondary hæmorrhages.
118	Bigelow	Feb. 26, 1864	Shoemaker	M. 26	" "	18 mo.	Circular	"	64 d.	
119	Clark	April 7, 1864	Cigar-maker	M. 24	" "	12 y.	Flap	"	31 d.	
120	"	April 16, 1864	Washerwoman	F. 34	Chronic disease of knee-joint	4 mo.	"	Death	38 d.	Tubercles and pyæmic deposits found at autopsy.
121	"	April 26, 1864	Farmer	M. 40	Necrosis of tibia	3 y.	"	Recovery	23 d.	Sec. hæmorrhage. Erysipelas. D. fr. exhaustion.
122	Hodges	July 26, 1864	"	M. 70	Tumor of leg	4 y.	Circular	Death	22 d.	Sec. hæmor. necess. lig. of fem. artery. Hospital gangrene. D. fr. pyæmia as shown at autopsy.
123	"	Aug. 5, 1864	Clerk	M. 34	Chronic disease of knee-joint	28 y.	"	"	82 d.	Resection of end of femur 1 year later.
124	Bigelow	Nov. 11, 1864	Laborer	M. 25	Necrosis of tibia	10 y.	Flap	Recovery	62 d.	Tubercles found in l. lung at autopsy.
125	Gay	Nov. 30, 1864	Merchant	M. 54	Chronic disease of knee-joint	2 mo.	Circular	Death	6 d.	Encephaloid. D. fr. return of disease 5 mos. later.
126	Bigelow	Dec. 1, 1864	Farmer	M. 37	Tumor of thigh	1 y.	Flap	Recovery	80 d.	[in lungs.
127	"	Dec. 7, 1864	Clerk	M. 26	Chronic disease of knee-joint	5 y.	Circular	"	94 d.	Encephaloid. At autopsy enceph. growth found
128	Gay	Jan. 5, 1865	Housewife	F. 61	Tumor of leg	15 mo.	"	Death	19 d.	Resection of end of femur.
129	Bigelow	Jan. 19, 1865	Minor	M. 5	Chronic disease of knee-joint	3 y.	"	Recovery	173 d.	D. fr. pyæmia, as shown at autopsy.
130	Clark	May 13, 1865	Seaman	M. 20	Tumor of thigh	6 y.	"	Death	22 d.	Secondary hæmorrhage.
131	Gay	Sept. 21, 1865	Painter	M. 36	Deformity of leg fr. fracture	2 y.	Flap	Recovery	24 d.	Resection of end of femur.
132	"	Nov. 8, 1865	Farmer	M. 21	Ankylosis of knee	4 y.	"	"	91 d.	D. fr. cancerous growth in lungs 8 mos. later.
133	Hodges	Nov. 17, 1865	Musician	M. 40	Cancer of sciatic nerve	1 y.	"	Death	42 d.	D. fr. pyæmia, as shown at autopsy.
134	"	Jan. 17, 1866	Shoemaker	M. 27	Chronic disease of knee-joint	2½ y.	"	"	47 d.	Pneumonia. D. fr. pyæmia, as shown at autopsy.
135	J. M. Warren	Jan. 27, 1866	Carpenter	M. 55	Tumor of leg	5 y.	Circular	Recovery	37 d.	Erysipelas.
136	"	May 5, 1866	Cobbler	M. 20	Chronic disease of knee-joint	3 y.	Flap	"	45 d.	Phthisis. Erysipelas.
137	"	May 29, 1866	Apothecary	M. 20	Necrosis of femur	6 mo.	"	"	28 d.	Secondary hæmorrhage.
138	"	June 9, 1866	Farmer	M. 21	Chronic disease of knee-joint	15 mo.	Teale's Circular	"	37 d.	Resection of end of femur. D. fr. pyæmia proved
139	"	June 27, 1866	Tanner	M. 55	" "	3 y.	Teale's Flap	Death	56 d.	D. from collapse.
140	Hodges	June 22, 1866	Bootmaker	M. 26	Fungus of stump	1 y.	"	"	1 d.	
141	"	Oct. 2, 1866	Laborer	M. 27	Necrosis of tibia	19 y.	"	Recovery	48 d.	Prim. amp. 12 years ago at 3fr. chr. dis. knee-joint.
142	"	Dec. 3, 1866	"	M. 27	" " stump	12 y.	"	"	41 d.	Encephaloid. Symptoms of pyæmia, and later of tumor in brain, but improving when discharged.
143	Bigelow	Jan. 3, 1867	Dyer	M. 32	Tumor of thigh	9 mo.	"	"	235 d.	Union almost throughout by first intention.
144	"	Jan. 4, 1867	Minor	M. 19	Necrosis of femur	11 y.	"	"	22 d.	Recent tubercles found in both lungs at autopsy.
145	J. M. Warren	Jan. 11, 1867	Paper-carrier	M. 52	Chronic disease of knee-joint	20 mo.	Circular	Death	32 d.	

Table 12 (concluded.) AMPUTATIONS OF THIGH.—PATHOLOGICAL.

No.	Operator.	Date.	Occupation.	Sex and Age.	Nature of Injury.	Duration.	Amputation. Method. Place.	Result.	Length of Time.	Details.
146	Clark	Mar. 20, 1867	Housewife	F. 28	Chronic disease of knee-joint	8 y.	Flap	Recovery	20 d.	
147	Hodges	June 15, 1867	Soldier	M. 23	Necrosis of stump	1 y.	"	"	33 d.	Pr. amp. for comp. fract. of thigh 11 mos. ago.
148	Bigelow	Oct. 9, 1867	Engraver	M. 22	Chronic disease of knee-joint	18 y.	Circular	"	122 d.	Extensive sloughing of flaps.
149	"	Feb. 17, 1868	Merchant	M. 38	Tumor of leg	8 y.	Flap	"	69 d.	Erysipelas.
150	"	Feb. 22, 1868	Minor	M. 18	"	6 mo.	"	"	39 d.	"Cancer."
151	Hodges	Mar. 18, 1868	"	M. 13	"	7 mo.	"	"	33 d.	Sarcoma.
152	"	May 1, 1868	"	M. 18	"	2½ mo.	"	"	30 d.	
153	Gay	July 29, 1868	Mechanic	M. 36	Chronic disease of knee-joint	4 mo.	"	"	47 d.	
154	Hodges	Sept. 30, 1868	Harnessmaker	M. 28	"	3 y.	"	"	28 d.	
155	Gay	Oct. 3, 1868	Bookseller	M. 37	"	1 y.	Teale's	"	30 d.	
156	Bigelow	Oct. 9, 1868	"	M. 32	"	5 mo.	Circular	Removed	102 d.	
157	Clark	April 3, 1869	Laborer	M. 44	Tumor of leg	9 mo.	Flap	Recovery	35 d.	
158	Clark	May 1, 1869	Spinster	F. 24	Chronic disease of knee-joint	3 mo.	Flap	"	49 d.	
159	Coolidge	May 17, 1869	Teamster	M. 32	Necrosis of tibia	8 mo.	Circular	"	23 d.	
160	Clark	June 18, 1869	Laborer	M. 24	Chronic disease of knee-joint	11 mo.	Flap	"	52 d.	Epilepsy.
161	Gay	Sept. 9, 1869	"	M. 35	Chronic disease of femur	5 y.	"	"	41 d.	Secondary hæmorrhage.
162	"	Oct. 19, 1869	Minor	M. 19	Necrosis of knee-joint	3 y.	"	"	27 d.	
163	"	Oct. 29, 1869	Seaman	M. 43	Tumor of thigh	6 y.	"	"	88 d.	Curvature of spine. Tumor in l. lumbar region. [Jaundice.
164	Bigelow	Nov. 6, 1869	Laborer	M. 26	Chronic disease of knee-joint	7 mo.	"	"	156 d.	Secondary hæmorrhages. [hæm. D. fr. exh.
165	Gay	July 14, 1870	Domestic	F. 20	Tumor of leg	2 y.	"	Death	17 d.	Exci. of tumor attemp. 3 wk's before amp. Many
166	Cabot	Feb. 21, 1871	Minor	M. 15	Chronic disease of knee-joint	2 y.	"	"	18 d.	D. from pyæmia.

The causes of amputation were:
 Chronic disease of knee-joint in 82 cases.
 Necrosis, 29 " Gangrene in 2 cases.
 Tumors, 29 " Excision of knee-joint 1 "
 Deformities, 6 " Phlegmasia dolens 1 "
 Ulcers, 6 " Traum. paralysis 1 "
 Ankyloses, 2 " Fungus of stump 1 "
 Caries, 2 " Necrosis of stump 1 "
 Painful stump 1 "
 Ulcer 1 "

Table 13. AMPUTATIONS AT KNEE-JOINT.—PATHOLOGICAL.

No.	Operator.	Date.	Occupation.	Sex and Age.	Disease.	Duration.	Method of Amputation.	Result.	Length of Time.	Details.
1	Cabot	June 4, 1859	Shoecutter	M. 30	Necrosis r. tibia	19 y.	Post. flap	Well	46 d.	Patella and cartil. removed. Reentered for diarrhoea, and died Oct. 2, 1859.
2	Bigelow	Feb. 8, 1868	Merchant	M. 52	Malignant tumor of leg	8 y.	"	"	69 d.	Patel. & cartil. removed. Sinuses in thigh form'd
3	Cabot	Nov. 28, 1868	Minor	M. 12	Chronic disease of knee	11 mo.	Long ant. flap	"	31 d.	
4	Bigelow	Jan. 8, 1870	Operative	F. 41	Pulpy degen. of knee-joint	3 y.	Ant. & post. "	"	42 d.	
5	"	Jan. 29, 1870	Operative	F. 23	"	7 y.	"	Dead	18 d.	
6	Hodges	May 23, 1870	Minor	F. 10	Conical and ulcerated stump	8 y.	"	Well	25 d.	
7	Clark	June 18, 1870	Wife	F. 62	Malignant disease of tibia	14 mo.	"	Dead	10 d.	[flap sloughed.
8	Bigelow	Nov. 12, 1870	Farmer	M. 27	Necros. tibia & ch. dis. of knee	12 y.	"	Well	131 d.	Long ant. & short p. fl. Dis. cartil. removed. Ant.
9	Cabot	Nov. 19, 1870	Carpenter	M. 34	Ankylo. knee & sinuses in leg	1½ y.	Long. ant. flap	Dead	57 d.	Pyæmia.
10	Bigelow	Dec. 24, 1870	Milliner	F. 27	Caries of knee-joint	25 y.	Ant. & post. flap	Well	61 d.	Long ant. and long post. flaps.
11	Cabot	Jan. 27, 1871	Nurse	F. 65	Abscess of knee-joint	1 y.	"	Dead	5 d.	Ant. flap sloughed.

Deaths from Exhaustion, 3; from Pyæmia, 2.
 Ratio of mortality, 36.36 per cent.

Recovered, 7; Died, 4—Total 11.

Table 14.

AMPUTATIONS AT KNEE-JOINT.—TRAUMATIC—PRIMARY.											
No.	Operator.	Date.	Occupation.	Sex and Age.	Injury.	Dura- tion.	Method of Amputation.	Result.	Length of Time.	Details.	
1	Hodges	Oct. 17, 1867	Mechanic	M. 38	Comp. com. fract. leg	1 h.	Ant.&post. flap	Well	72 d.	Amp. of left foot also (procédé de M. Roux.)	
2	"	June 3, 1868	Bookkeeper	M. 18	" "	1 h.	" "	"	81 d.	Post. flap sloughed.	
3	"	Aug. 6, 1869	Merchant	M. 82	" "	4½ h.	" "	Dead	2 h.	Had bled excessively.	
4	Clark	June 4, 1870	Coachman	M. 35	" "	2 h.	" "	"	1 d.	C. com. fract. of pelvis also. Horse R. Road.	
5	Hodges	June 25, 1870	Auditor	M. 49	" "	2 h.	" "	"	23 d.	L. ant.&sh. post. fl.; acute cellulitis; p. fl. sligh'd.	
Recovered, 2; Died, 3;—Total, 5.										R. R. accident, 1, which was fatal.	
Ratio of mortality, 60.00 per cent.										Deaths from Exhaustion, 3.	

Table 15.

AMPUTATIONS OF LEG.—TRAUMATIC—PRIMARY.											
No.	Operator	Date.	Occupation.	Sex and Age.	Nature of Injury.	Duration.	Amputation.		Result.	Length of Time.	Details.
							Method.	Place.			
1	Hayward	April 25, 1832	Truckman	M. 27	Laceration of leg	18 h.	Circular		Recovery	82 d.	Alcoholic habit. Secondary hemorrhages.
2	"	Mar. 5, 1838	Laborer	M. 30	Comp. com. fract. of leg	3 h.	"		Death	9 d.	Inj. to back. Jaund. Convul. Cause of d. unkn.
3	"	Jan. 16, 1839	Teamster	M. 26	"	22 h.	"		Recovery	119 d.	Delirium tremens.
4	Townsend	Aug. 14, 1841	Apple-woman	F. 50	"	3 h.	"		"	56 d.	Became insane and was sent to the asylum.
5	"	Nov. 16, 1846	Tanner	M. 35	"	1½ h.	Flap		"	138 d.	R. R. accident. Delirium tremens.
6	"	Feb. 20, 1847	Brakeman	M. 27	"	6 h.	Circular		"	161 d.	do. Secondary hemorrhage. Pleuritis.
7	J. M. Warren	Mar. 24, 1847	Laborer	M. 39	"	3 h.	"		Death	6 d.	do. F. of skull. D. fr. comp. as sh. at autopsy.
8	Townsend	Sept. 2, 1847	"	M. 40	"	4 h.	"		"	18 h.	do. cont. of abdomen. D. fr. periton. and perf.
9	"	Sept. 27, 1847	"	M. 26	"	3 h.	"		Recovery	95 d.	[of small intest. shown at aut.
10	J. M. Warren	Mar. 13, 1848	Minor	F. 6	"	1 h.	"		"	40 d.	do.
11	"	April 27, 1848	Domestic	F. 21	"	2 h.	"		"	115 d.	do. Resection of end of bones. Erysipelas.
12	"	May 8, 1849	Seaman	M. 27	"	15 h.	Flap		Death	11 d.	do. Del. trem. Forearm also injured.
13	"	Oct. 6, 1849	Laborer	M. 35	"	5 h.	"		Recovery	235 d.	do. Erysipelas of scalp and stump.
14	Townsend	June 1, 1850	"	M. 25	"	2 h.	"		Death	18 d.	do. Double amputation. Intoxication.
15	"	Sept. 14, 1850	"	M. 50	"	3 h.	"		Recovery	74 d.	do. Sloughing of flaps.
16	J. M. Warren	April 1, 1851	"	M. 57	"	1½ h.	Circular		"	75 d.	
17	Townsend	Aug. 1, 1851	Domestic	F. 18	"	17 h.	Liston's		"	109 d.	
18	"	Aug. 22, 1851	Minor	M. 18	"	1 h.	Circular		"	91 d.	Right thigh also amputated.
19	"	Oct. 17, 1851	Teamster	M. 30	"	8 h.	"		"	95 d.	Delirium tremens.
20	Parkman	Oct. 18, 1852	Laborer	M. 33	"	3 h.	"		"	26 d.	R. R. accident.
21	Clark	Nov. 17, 1852	Carpenter	M. 35	"	2 h.	Flap		Death	1 d.	" Fract. of skull and forearm. Died
22	Cabot	Jan. 21, 1854	Seaman	M. 19	"	2 h.	"		Recovery	42 d.	
23	J. M. Warren	Mar. 9, 1854	Stonecutter	M. 32	"	2 h.	Flap		"	67 d.	R. R. accident. Fracture of nose.
24	Clark	June 15, 1854	Laborer	M. 18	"	2 h.	"		"	58 d.	"
25	"	June 19, 1854	"	M. 24	"	2 h.	"		Death	3 d.	" Comp. com. fract. of skull. D. fr. comp.
26	"	June 21, 1854	"	M. 21	"	3 h.	"		"	7 d.	" Erysipelas.
27	Parkman	Aug. 7, 1854	Trader	M. 57	"	1 h.	Circular		Recovery	31 d.	"
28	"	Sept. 12, 1854	Engineer	M. 22	"	3 h.	"		"	42 d.	Comp. fract. of left leg. D. fr. pyæmia.
29	Bigelow	Dec. 5, 1854	Laborer	M. 28	"	2 h.	"		Death	36 d.	R. R. accident. Secondary hemorrhage.
30	Cabot	Dec. 16, 1854	Seaman	M. 33	"	2 h.	"		Recovery	125 d.	[thotonos and spasm.
31	"	Feb. 14, 1855	Minor	M. 16	"	2 h.	"		"	66 d.	R. R. accident. Lisfranc's amp. of l. foot. Opis-
32	Bigelow	Feb. 24, 1855	Book-peddler	F. 26	"	3 h.	"		Death	11 d.	Delirium tremens. Not fully cicatrized.
33	Cabot	May 28, 1855	Laborer	M. 19	"	3 h.	"		Recovery	49 d.	R. R. accident. Amp. of thumb. Sloughing of fl.
34	"	Dec. 26, 1855	Domestic	F. 20	"	2 h.	"		"	61 d.	Obstinate vomiting.
35	Clark	May 18, 1856	Mariner	M. 55	"	20 h.	"		Death	7 d.	Phlebitis.
36	Townsend	Aug. 12, 1856	Mechanic	M. 50	"	1½ h.	"		"	10 d.	Intoxication & great loss of blood. D. fr. collapse.
37	J. M. Warren	April 18, 1857	Clerk	M. 19	"	12 h.	"		"	25 h.	

Table 15 (continued.)

AMPUTATIONS OF LEG.—TRAUMATIC—PRIMARY.												
No.	Operator.	Date.	Occupation	Sex and Age.	Nature of Injury.		Duration.	Amputation.		Result.	Length of Time.	Details.
					Comp.	com. fract.		Method.	Place.			
38	Clark	Nov. 4, 1857	Merchant	M. 59	Comp.	“ “ of ankle	15 h.	Flap	3—3	Recovery	132 d.	Del. tremens. Extensive sloughing. Erysipelas.
39	Cabot	June 10, 1858	Minor	F. 7	“	“ “ foot	2 h.	Circular	3—3	“	43 d.	R. R. accident.
40	Townsend	July 5, 1858	Shoemaker	M. 20	“	“ “ leg	16 h.	“	3—3	“	71 d.	“
41	Gay	July 12, 1858	Minor	M. 13	“	“ “ foot	2 h.	Circular	3—3	Recovery	120 d.	R. R. accident.
42	Townsend	Oct. 22, 1858	Mason	M. 32	“	“ “ “	2 h.	“	3—3	“	83 d.	“
43	J. M. Warren	June 17, 1859	Washerwoman	F. 46	“	“ “ ankle	1 h.	Flap	3—3	Death	116 d.	Tetanus.
44	Cabot	June 23, 1859	Minor	F. 19	“	“ “ leg	2 h.	Circular	3—3	Recovery	13 d.	R. R. accident. Hysteria.
45	Townsend	July 4, 1859	Laborer	M. 35	“	“ “ “	2 h.	“	3—3	Recovery	75 d.	“ [found at autopsy.
46	“	July 16, 1859	Seaman	M. 35	“	“ “ ankle	2 h.	“	3—3	Death	15 h.	“ D. from lesions of brain
47	Gay	July 13, 1860	Laborer	M. 68	“	“ “ leg	2 h.	“	3—3	Recovery	56 d.	“
48	“	Aug. 27, 1861	Minor	F. 2	“	“ “ foot	2 h.	“	3—3	Death	6 d.	“ Died from collapse.
49	“	Oct. 4, 1861	Laborer	M. 30	“	“ “ “	6 h.	“	3—3	Recovery	76 d.	“ Del. tremens. Resect'n of end of bones.
50	Cabot	Dec. 25, 1861	Blacksmith	M. 26	“	“ “ “	2 h.	“	3—3	“	85 d.	“
51	Gay	Aug. 28, 1862	Minor	M. 14	“	“ “ ankle	3 h.	“	3—3	“	58 d.	R. R. accident.
52	“	Oct. 27, 1862	Ropemaker	M. 22	“	“ “ “	5 h.	“	3—3	“	24 d.	“
53	J. M. Warren	May 12, 1863	Minor	M. 9	“	“ “ leg	2 h.	Flap	3—3	Death	11 d.	R. R. accident. Secondary hamorrhages.
54	Clark	July 13, 1863	Laborer	M. 55	“	“ “ “	2 h.	“	3—3	“	11 d.	R. R. accident.
55	Hodges	July 15, 1863	Engineer	M. 22	“	“ “ “	2 h.	“	3—3	Recovery	75 d.	“
56	“	July 18, 1863	Laborer	M. 26	“	“ “ “	2 h.	Circular	3—3	Removed	6 d.	R. R. accident. Scalp. Carried home by friends.
57	“	Sept. 12, 1863	Carpenter	M. 58	“	“ “ both legs	3 h.	“	3—3	Recovery	94 d.	Amp. of rt. thigh. Resec. of end of fem. 3 m. later.
58	“	Sept. 15, 1863	Laborer	M. 32	“	“ “ “	3 h.	“	3—3	Death	6 h.	Double amputation. D. from shock.
59	“	Sept. 29, 1863	Soldier	M. 24	“	“ “ leg	3 h.	“	3—3	“	26 d.	Diarrhoea.
60	“	Oct. 29, 1863	Laborer	M. 47	“	“ “ “	2 h.	“	3—3	Recovery	64 d.	“
61	Cabot	Feb. 11, 1864	“	M. 35	“	“ “ “	3 h.	“	3—3	Death	8 d.	R. R. accident. Delirium.
62	Bigelow	Feb. 20, 1864	“	M. 33	“	“ “ “	3 h.	“	3—3	“	22 d.	“ Died from pyæmia.
63	Clark	April 2, 1864	Soldier	M. 30	“	“ “ ankle	16 h.	Flap	3—3	Recovery	182 d.	“ Double amputation.
64	Hodges	July 18, 1864	Minor	M. 4	“	“ “ both legs	3 h.	“	3—3	Death	21 d.	Double amp. Tubercles and pyæmia shown at aut.
65	Cabot	Aug. 14, 1864	Laborer	M. 22	“	“ “ leg	9 h.	Circular	3—3	“	1 d.	R. R. accident. Amp. of arm in 3. [D. fr. shock.
66	Bigelow	Dec. 8, 1864	Brakeman	M. 35	“	“ “ “	2 h.	Flap	3—3	Recovery	80 d.	Laceration of neck, thigh, &c., fr. explosion of shell.
67	Clark	April 18, 1865	Laborer	M. 20	“	“ “ “	2 h.	“	3—3	Death	6 h.	Delirium tremens. Sloughing of flaps.
68	“	April 20, 1865	“	M. 31	“	“ “ “	2 h.	“	3—3	“	3 d.	“
69	“	June 28, 1865	“	M. 56	“	“ “ foot	1½ h.	“	3—3	Recovery	48 d.	Fracture of ulna. Died from shock.
70	Gay	Aug. 4, 1865	“	M. 35	“	“ “ ankle	24 h.	Circular	3—3	Death	8 h.	R. R. accident.
71	Hodges	Sept. 19, 1866	Seaman	M. 32	“	“ “ “	2 h.	“	3—3	Recovery	52 d.	“ Intoxication. Sloughing of flaps.
72	Gay	Nov. 2, 1866	Driver	M. 19	“	“ “ leg	2 h.	“	3—3	“	86 d.	“
73	“	Nov. 3, 1866	Bootmaker	M. 24	“	“ “ foot	2 h.	“	3—3	“	94 d.	“
74	Bigelow	Nov. 23, 1866	Brakeman	M. 27	“	“ “ leg	2 h.	“	3—3	“	61 d.	“
75	Gay	Nov. 28, 1866	Minor	M. 12	“	“ “ “	2 h.	Flap	3—3	“	69 d.	“
76	Clark	Sept. 13, 1867	Laborer	M. 37	“	“ “ foot	2 h.	Roux's	3—3	“	72 d.	“ Amp. of right leg at knee-joint.
77	Hodges	Oct. 17, 1867	Mechanic	M. 38	“	“ “ both legs	2 h.	Circular	3—3	“	99 d.	Double amputation.
78	Bigelow	Jan. 15, 1868	Minor	F. 6	“	“ “ ankle	5 h.	Flap	3—3	“	95 d.	R. R. accident. Contusion of other foot.
79	Cabot	Jan. 20, 1868	Laborer	M. 28	“	“ “ both legs	4 h.	Circular	3—3	Death	43 d.	D. fr. pyæmia.
80	Hodges	Mar. 4, 1868	Teamster	M. 60	“	“ “ “	2 h.	Flap	3—3	Recovery	74 d.	R. R. accident.
81	Coolidge	May 26, 1868	Laborer	M. 42	“	“ “ leg	2 h.	“	3—3	“	52 d.	“
82	Hodges	June 6, 1868	Shoemaker	M. 43	“	“ “ “	2 h.	Circular	3—3	“	24 d.	Boiler explosion.
83	Clark	June 9, 1868	Carpenter	M. 19	“	“ “ “	1 h.	“	3—3	Death	28 d.	R. R. accident. D. fr. pyæmia as shown at aut.
84	Hodges	June 26, 1868	Shoemaker	M. 28	“	“ “ “	“	“	3—3	Recovery	42 d.	“ Toe amputated.
85	Coolidge	Aug. 6, 1868	Minor	M. 9	“	“ “ “	“	“	3—3	Death	20 d.	“ Many sec. hæm.'s. Acute cystitis.
86	Gay	Nov. 6, 1868	Trader	M. 33	“	“ “ “	“	“	3—3	“	“	“

Table 15 (concluded.) AMPUTATIONS OF LEG.—TRAUMATIC—PRIMARY.

No.	Operator.	Date.	Occupation.	Sex and Age.	Nature of Injury.		Dura- tion.	Amputation. Method. Place.	Result.	Length of Time.	Details.
87	Bigelow	Jan. 6, 1869	Laborer	M. 18	Comp.	com. fract. of ankle	2 h.	Circular	Recovery	187 d.	Resection of end of bones. Sec. hemorrhages.
88	Coolidge	June 19, 1869	Minor	F. 2	"	" " of both legs	2 h.	Flap	Death	4 d.	R. R. accident. Double amputation.
89	Hodges	Sept. 14, 1869	Teamster	M. 37	"	" " leg	1 h.	Circular	"	6 d.	Contusion and gangrene of l. leg. Del. trem.
90	"	Sept. 23, 1869	Flag-man	M. 21	"	" " "	2 h.	"	Recovery	69 d.	R. R. accident. 4 toes amputated. Erysipelas.
91	Gay	Oct. 28, 1869	Laborer	M. 18	"	" " "	2 h.	"	"	58 d.	" " Extensive scalp wound.
92	Cabot	Dec. 14, 1869	Painter	M. 28	"	" " "	2 h.	"	Death	30 h.	" " Convulsions. Died fr. collapse.
93	Hodges	Mar. 8, 1870	Laborer	M. 31	"	" " "	2 h.	"	Recovery	50 d.	Erysipelas.
94	Gay	July 30, 1870	"	M. 19	"	" " foot	3 h.	Flap	"	54 d.	Secondary hemorrhage.
95	Hodges	Aug. 29, 1870	Minor	M. 9	"	" " leg	2 h.	Circular	"	152 d.	Laceration of other foot.
96	"	Oct. 29, 1870	Laborer	M. 19	"	" " "	2 h.	"	"	147 d.	R. R. acc. Hos. gangr. Resec. of end of bones.
97	"	Nov. 3, 1870	Shoemaker	M. 19	"	" " foot	3 h.	Flap	"	65 d.	" " Erysipelas.
Recovered,	63		Deaths from Exhaustion,	17					Deaths from Cerebral Affection,	1	R. R. accidents, 57, of which 18 were fatal.
Died,	33		"	4					"	1	
Removed,	96		"	4					Unknown Cause,		
Ratio of mortality, 34.37				1—Total	97						

Table 16. AMPUTATIONS OF LEG.—TRAUMATIC—SECONDARY.

No.	Operator.	Date.	Occupation.	Sex and Age.	Nature of Injury.	Dura- tion.	Amputation. Method. Place.	Result.	Length of Time.	Details.
1	J. C. Warren	Feb. 4, 1822	Laborer	M. 60	Comp. fracture of leg	12 d.	Circular	Death	6 d.	Delirium tremens. Gangrene.
2	"	Nov. 10, 1827	"	M. 30	" " " "	11 d	"	Recovery	65 d.	" " "
3	G. Otis	June 3, 1829	Shoemaker	M. 27	" " " "	19 d.	"	Death	10 h.	Alco. habit. Great loss of blood. D. fr. col.
4	J. C. Warren	Feb. 26, 1830	Laborer	M. 49	" " " "	28 d.	"	Recovery	71 d.	" " " "
5	Hayward	June 9, 1831	Carpenter	M. 49	" " " "	1 y.	"	Death	82 d.	Delirium tremens.
6	J. C. Warren	Feb. 8, 1831	Laborer	M. 24	Comp. com. fracture of foot	10 d.	"	Recovery	33 d.	R. R. accident. Gangrene.
7	Townsend	July 17, 1845	Painter	M. 40	Comp. dislocation of ankle	2½ mo.	"	"	25 d.	"
8	"	July 25, 1845	"	M. 21	com. fract. of leg	15 d.	"	"	31 d.	Much sloughing before operation.
9	Bigelow	Sept. 21, 1847	Laborer	M. 25	" " " "	6 d.	"	"	119 d.	R. R. accident. Resection of end of bones.
10	Hayward	Nov. 8, 1848	Minor	M. 10	" " " foot	3 d.	"	Death	7 d.	Very nervous temperament. Tetanus.
11	Parkman	Dec. 7, 1848	Laborer	M. 24	" " " ankle	10 d.	Flap	Recovery	83 d.	R. R. accident.
12	J. M. Warren	Feb. 11, 1849	"	M. 30	" " " "	34 d.	"	"	54 d.	Fell upon leg while wrestling.
13	Parkman	Sept. 11, 1849	"	M. 25	" " " leg	18 d.	"	"	134 d.	Secondary hemorrhage.
14	"	June 15, 1850	"	M. 22	" " " "	12 d.	"	"	140 d.	Erysipelas before op. Resection of end of bones.
15	J. M. Warren	April 30, 1851	Seaman	M. 31	" " " "	28 d.	Circular	"	62 d.	Delirium tremens. Neuralgia.
16	Parkman	July 28, 1851	Teamster	M. 29	" " " "	11 d.	"	Death	15 d.	Del. trem. D. fr. pyæmia, as shown at aut.
17	"	Sept. 29, 1852	Farmer	M. 33	" " " "	20 d.	Flap	"	7 d.	R. R. accident. Sec. hæmors. D. fr. pyæmia.
18	Bigelow	Jan. 7, 1854	Laborer	M. 40	" " " "	10 d.	Circular	"	14 d.	Delirium tremens. D. fr. pyæmia.
19	Townsend	July 21, 1854	"	M. 55	" " " "	22 d.	"	Recovery	18 d.	" " Erysipelas. Not fully healed.
20	"	Sept. 19, 1854	"	M. 22	" " " "	40 d.	"	"	198 d.	Imbecility.
21	Cabot	Jan. 13, 1855	Carpenter	M. 23	" " " "	19 d.	"	"	47 d.	"
22	"	Feb. 15, 1855	Mechanic	M. 38	dislocation of ankle	12 d.	"	"	86 d.	Intoxication.
23	J. M. Warren	April 30, 1857	Laborer	M. 60	com. fracture of leg	2 d.	Flap	Death	26 d.	R. R. accident. Refused to submit to prim. op.
24	Townsend	Aug. 18, 1857	Minor	M. 14	" " " foot	8 d.	Circular	Recovery	93 d.	Sloughing of flaps.
25	"	Aug. 20, 1857	Laborer	M. 23	" " " leg	21 d.	Flap	"	142 d.	Scalp wounds. Secondary hæm. Gangrene.
26	Bigelow	Dec. 22, 1857	Farmer	M. 60	" " " "	2 mo.	Circular	"	32 d.	"

Table 16 (concluded.) AMPUTATIONS OF LEG.—TRAUMATIC—SECONDARY.

No.	Operator.	Date.	Occupation.	Sex and Age.	Nature of Injury.	Duration.	Amputation. Method. Place.	Result.	Length of Time.	Details.
27	Bigelow	Jan. 23, 1858	Housewife	F. 35	Comp. com. fract. of ankle	17 d.	Circular	Death	17 d.	Delivered. D. fr. pyæmia as shown at autopsy.
28	Cabot	Dec. 4, 1858	Tailor	M. 49	" " " leg	7 w.	"	Recovery	59 d.	Erysipelas. Resection of end of bones.
29	"	Jan. 24, 1860	Teamster	M. 65	" " " "	18 d.	Flap	"	187 d.	D. from pyæmia.
30	"	Jan. 18, 1860	Charwoman	F. 60	" " " "	16 d.	Circular	Death	10 d.	Del. trem. Erysipelas. Resection of end of bones.
31	J. M. Warren	June 23, 1860	Laborer	M. 58	Comp. com. fract. of ankle	38 d.	Flap	Recovery	235 d.	Mucous and bloody stools. D. fr. pyæmia.
32	Townsend	Aug. 6, 1860	Laborer	M. 22	Comp. com. fract. of leg	15 d.	Circular	Death	6 d.	
33	Clark	May 9, 1861	Minor	F. 43	Fracture of ankle	20 d.	Flap	Recovery	29 d.	
34	Townsend	Aug. 12, 1861	"	M. 11	Comp. com. fract. of leg	16 d.	Circular	"	50 d.	
35	"	Aug. 31, 1861	"	M. 4	Laceration of foot	3 d.	"	"	50 d.	
36	Cabot	Aug. 1, 1861	Seaman	M. 40	Comp. com. fract. of leg	29 d.	"	Death	4 d.	No lesion found at autopsy.
37	"	Dec. 24, 1862	Minor	M. 5	Comminuted fract. of ankle	13 d.	"	Recovery	26 d.	R. R. accident. [1 year later.
38	Clark	Aug. 15, 1863	Fireman	M. 23	Comminuted fract. of foot	25 d.	"	"	53 d.	" Erysip. Resec. of end of bones
39	Bigelow	Nov. 21, 1863	Med. student	M. 24	Comp. disloc. at ankle	15 mo.	"	"	3 d.	R. R. accident. D. from collapse.
40	Cabot	Dec. 10, 1863	Shoemaker	M. 44	Comp. com. fracture of leg	2 d.	"	Death	8 d.	D. from pyæmia.
41	"	April 21, 1864	Laborer	M. 55	Comp. disloc. at ankle	29 d.	Flap	Recovery	60 d.	Diarrhoea.
42	"	Dec. 28, 1864	Cabinetmaker	M. 53	Comp. fracture of leg	17 d.	Circular	Death	26 d.	R. R. ac. Pirigoff's amp. performed primarily.
43	Hodges	Aug. 19, 1865	Fireman	M. 19	Comp. com. fract. of foot	55 d.	Flap	Recovery	13 d.	" Del. trem. D. fr. pyæm. shown at aut.
44	Bigelow	Nov. 11, 1865	Cabinetmaker	M. 22	Comp. com. fract. of foot	14 d.	Circular	Death	64 d.	Phlebitis.
45	"	Dec. 21, 1865	Laborer	M. 35	Comp. com. fract. of ankle	21 d.	"	Recovery	50 d.	R. R. accident.
46	Cabot	Dec. 26, 1865	Tailor	M. 21	Comp. com. fract. of foot	11 d.	Flap	Death	93 d.	Resection of ends of bones 1 month later.
47	Cabot	Nov. 11, 1867	Seaman	M. 18	Comp. com. fract. of ankle	19 mo.	Flap	Recovery	45 d.	Delirium tremens.
48	Hodges	May 12, 1868	Teamster	M. 27	Comminuted fract. of ankle	15 d.	Circular	Death	12 d.	
49	Bigelow	Feb. 6, 1869	Laborer	M. 56	Comp. com. fract. of leg	21 d.	"	Recovery	33 d.	R. R. accident.
50	Cabot	Feb. 19, 1869	Minor	M. 12	Comp. com. fracture of foot	6 mo.	Flap	Recovery	67 d.	Resection of end of bones.
51	Gay	Aug. 18, 1870	Clerk	M. 19	Comp. com. fracture of foot	9 d.	"	"	41 d.	Pyæmia suspected before amp. and found at aut.
52	Cabot	Dec. 23, 1870	Laborer	M. 27	Laceration of leg	1 mo.	Circular	Death		R. R. accidents, 12, of which 6 were fatal.

Recovered, 34
Died, 18—Total, 52
Ratio of mortality, 34.61 per cent.

Table 17. AMPUTATIONS OF LEG.—PATHOLOGICAL.

No.	Operator.	Date.	Operator.	Sex and Age.	Disease.	Duration.	Amputation. Method. Place.	Result.	Length of Time.	Details.
1	J. C. Warren	Dec. 19, 1823	Sailor	M. 21	Frost-bite of feet	13 d.	Circular	Recovery	61 d.	Double amputation. One flap.
2	"	May 22, 1825	Merchant	M. 21	Chronic dis. of ankle-joint	12 y.	Flap	"	71 d.	
3	"	Dec. 17, 1825	Hackman	M. 41	Necrosis of tibia	2 y.	"	"	30 d.	Nearly healed. Died one month later.
4	"	April 4, 1828	Grocer	M. 21	" " "	15 y.	Circular	"	65 d.	Chills and fever. Growth appearing in groin.
5	"	Mar. 5, 1829	Housewife	F. 50	Tumor of leg and foot	10 mo.	"	"	47 d.	Alcoholic habit.
6	G. Otis	Feb. 11, 1830	Laborer	M. 44	Ulcers of leg and foot	20 y.	"	"	83 d.	
7	J. C. Warren	Dec. 18, 1830	Seaman	M. 43	" " "	1½ y.	"	"	62 d.	
8	"	Jan. 19, 1833	Baker	M. 57	" " "	20 y.	"	"	32 d.	
9	Hayward	Mar. 2, 1833	Silversmith	M. 19	Deformity of foot	Cong.	"	"	33 d.	Lisfranc's amp. of foot for frost-bite.
10	"	Nov. 12, 1834	Shoemaker	M. 37	Ulcer of stump	3 y.	"	"	20 d.	D. from pyæmia.
11	J. C. Warren	Feb. 6, 1836	Farmer	M. 43	" " "	14 y.	"	Death	46 d.	Secondary hæmorrhage.
12	Hayward	Feb. 13, 1836	Chaisemaker	M. 38	" " leg	4 y.	"	Recovery	51 d.	Erysipelas.
13	"	Dec. 10, 1836	Woolspinner	M. 28	Caries of tarsus		"	"	50 d.	Intoxication.
14	"	Jan. 21, 1837	Wheelwright	M. 43	Frost-bite of feet	24 d.	"	"		

Table 17 (continued.) AMPUTATIONS OF LEG.—PATHOLOGICAL.

No.	Operator.	Date.	Occupation.	Sex and Age.	Disease.	Duration.	Amputation. Method. Place.	Result.	Length of Time.	Details.
15	Hayward	Nov. 23, 1837	Shoebinder	F. 25	Deformity of ankle	21 y.	Circular	Recovery	43 d.	Deformity followed blow on head. Hysteria.
16	"	April 17, 1838	Overseer	M. 38	Ulcer of leg	18 y.	"	"	88 d.	Opium habit. Malarial fever. Scald. Erys. }
17	Townsend	Nov. 6, 1839	Laborer	M. 29	Tumor of leg	4 y.	"	"	55 d.	[Sec'y hamor. Ijg. of fem. artery. }
18	"	Sept. 28, 1840	Mariner	M. 18	Ulcer of stump	16 mo.	"	"	32 d.	Foot seized by shark. Prim. amp. with razor.
19	"	Oct. 18, 1842	Farmer	M. 73	" " leg	7 y.	"	"	51 d.	Conical stump.
20	Hayward	Nov. 17, 1843	Teamster	M. 45	" " stump	18 mo.	"	"	28 d.	
21	Townsend	Mar. 10, 1845	Farmer	M. 60	Necrosis of tibia	20 y.	"	"	38 d.	
22	"	Dec. 23, 1846	Domestic	F. 42	Chronic dis. of ankle-joint	8 y.	"	"	52 d.	Erysipelas.
23	Hayward	Jan. 2, 1847	"	F. 56	Necrosis of tibia	7 mo.	"	"	91 d.	
24	J. C. Warren	June 14, 1847	Mariner	M. 19	Tumor of leg	2½ y.	"	"	230 d.	
25	Parkman	Aug. 23, 1848	Mechanic	M. 23	Chronic dis. of ankle-joint	1 y.	"	"	32 d.	
26	J. M. Warren	April 7, 1849	Minor	F. 17	Necrosis of tarsus	16 y.	Flap	"	27 d.	Spina bifida. Tenotomy of other foot later.
27	"	May 2, 1849	Domestic	F. 28	" " "	1 y.	"	"	59 d.	Erysipelas.
28	Hayward	Jan. 13, 1851	Seaman	M. 22	Caries of tarsus	15 y.	Circular	"	21 d.	
29	J. M. Warren	April 2, 1851	"	M. 22	" " "	16 mo.	"	"	71 d.	
30	Parkman	Oct. 10, 1851	Mechanic	M. 41	Chronic dis. of ankle-joint	9 y.	"	"	30 d.	Rheumatism.
31	Townsend	July 3, 1854	"	M. 64	Ulcer of leg	9 y.	"	"	40 d.	
32	Bigelow	Aug. 29, 1854	Laborer	M. 30	" of stump	9 mo.	"	"	37 d.	
33	"	Dec. 23, 1854	"	M. 22	Chronic dis. of ankle-joint	1 y.	"	"	68 d.	Pulmonary complication.
34	Townsend	May 15, 1855	Mechanic	M. 56	Ulcer of leg	17 y.	"	"	23 d.	
35	Bigelow	Jan. 26, 1856	"	M. 25	Gangrene of stump	15 d.	"	Death	35 d.	Syme's amp. before entrance. Hosp. gang.
36	"	May 16, 1856	Farmer	M. 43	Caries of tarsus	10 y.	"	Recovery	65 d.	
37	J. M. Warren	April 23, 1857	"	M. 53	Necrosis of tibia	43 y.	"	"	42 d.	
38	"	April 28, 1857	Mechanic	M. 25	" " tarsus	9 y.	"	"	68 d.	
39	Townsend	June 23, 1857	Laborer	M. 63	Ulcers of leg	37 y.	"	"	111 d.	Sec. hæmorrhages. Obstinate vomiting.
40	"	Aug. 29, 1857	"	M. 30	" " "	7 mo.	"	"	23 d.	
41	Bigelow	Oct. 13, 1857	Housekeeper	F. 56	" " "	10 y.	Flap	"	98 d.	Erysipelas.
42	"	Nov. 28, 1857	Mechanic	M. 22	Caries of tarsus	4 mo.	Circular	"	144 d.	Necrosis of end of bone.
43	"	Dec. 28, 1857	"	M. 50	Gangrene of foot	4 mo.	"	Death	82 d.	Resulting fr. lig. of fem. art. for popliteal }
44	J. M. Warren	May 22, 1858	Laborer.	M. 46	Caries of tarsus	1 y.	Flap	Recovery	63 d.	[aneurism. Erysipelas. D. fr. pyæmia. }
45	Townsend	July 10, 1858	Lawyer	M. 47	" " "	2 y.	"	"	60 d.	Opium habit.
46	Gay	July 16, 1859	Teacher	M. 30	Ankylosis at knee	28 y.	Circular	"	47 d.	Erysipelas.
47	Townsend	Oct. 15, 1859	Machinist	M. 28	Caries of tarsus	4 mo.	"	"	82 d.	
48	Cabot	Dec. 10, 1859	Blacksmith	M. 38	Frost-bite of feet	10 d.	Flap	"	53 d.	Double amputation.
49	"	Jan. 2, 1860	Trader	M. 38	Caries of tarsus	9 mo	"	Death	55 d.	" " one a mo. later than the other.
50	"	Jan. 17, 1860	Teamster	M. 27	Frost-bite of feet	9 d.	"	Recovery	141 d.	Amp. of toe of left foot on 97th day.
51	Clark	Mar. 24, 1860	Farmer	M. 17	Caries of tarsus	9 mo.	Circular	Death	28 d.	Sloughing of flaps. Obstinate vomiting.
52	J. M. Warren	April 13, 1860	Minor	F. 13	Necrosis of tarsus	6 y.	Syme's	Recovery	35 d.	Congenital talipes varus.
53	Bigelow	July 30, 1860	Tanner	M. 18	" " "	6 y.	Flap	"	24 d.	
54	J. M. Warren	Aug. 25, 1860	Farmer	M. 16	" " tibia	10 mo.	Circular	"	50 d.	
55	Gay	Sept. 14, 1860	Clerk	M. 24	" " "	3 y.	"	"	75 d.	Hospital gangrene.
56	Townsend	Oct. 3, 1860	Farmer	M. 66	Ulcers of leg	12 y.	"	Death	20 d.	Atheroma. Sec'y hæmorr. D. fr. pyæmia.
57	Bigelow	Nov. 13, 1860	Domestic	F. 34	Pes equino-varus	Cong	"	Recovery	63 d.	Sciatica.
58	Cabot	Dec. 6, 1860	Farmer	M. 26	Necrosis of tibia	19 y.	"	"	137 d.	
59	J. M. Warren	Oct. 12, 1861	Minor	F. 15	Caries of tarsus	8 y.	Flap	"	34 d.	Following fracture of femur.
60	Clark	Mar. 3, 1862	Fisherman	M. 26	Gangrene of foot	39 y.	"	"	79 d.	Erysipelas. Profuse secondary hæmorrhage.
61	J. M. Warren	May 27, 1862	Housewife	F. 64	Ulcers of leg and foot]	20 y.	"	Death	8 d.	
62	"	Mar. 13, 1863	Butcher	M. 57	Necrosis of tibia	20 y.	"	Recovery	209 d.	
63	"	Mar. 26, 1863	Farmer	M. 20	" " tarsus	7 mo.	"	Death	14 d.	Profuse sec'y hæmorr. necess. lig. of fem. art.

AMPUTATIONS OF LEG.—PATHOLOGICAL.

Table 17 (continued.)

No.	Operator.	Date.	Occupation.	Sex and Age.	Nature of Injury.	Duration.	Amputation. Method.	Amputation. Place.	Result.	Length of Time.	Details.
64	J. M. Warren	July 10, 1863	Clerk	M. 24	Necrosis of tibia	13 y.	Circular		Death	23 d.	Jaundice. Secondary hemorrh. D. fr. pyæmia.
65	Clark	Sept. 18, 1863	Farmer	M. 25	Ulcer of stump	1½ y.	Flap		Recovery	21 d.	Primary amputation for gangrene.
66	Bigelow	Feb. 5, 1864	Lieutenant	M. 35	Conical stump	7 mo.	"		"	47 d.	Delirium tremens.
67	J. M. Warren	Mar. 28, 1864	Laborer	M. 38	Necrosis of tarsus	5 d.	Circular		Death	20 d.	Sloughing of flaps. D. fr. pyæmia.
68	Clark	May 21, 1864	Seaman	M. 20	Gangrene of feet	25 d.	"		Recovery	55 d.	Chopart's amp. of other foot. Not fully healed.
69	Hodges	June 20, 1864	Clerk	M. 25	Ulcer of stump	1 y.	"		"	73 d.	Primary amp. for bullet wound.
70	J. M. Warren	June 29, 1864	Turner	M. 30	Necrosis of tibia	25 y.	Flap		"	40 d.	
71	Hodges	July 7, 1864	Laborer	M. 55	"	25 y.	Circular		"	34 d.	
72	Clark	July 26, 1864	Laborer	M. 40	Conical stump	7 mo.	Flap		"	57 d.	
73	Gay	Aug. 1, 1864	Soldier	M. 24	Atrophy of leg and foot	22 y.	Circular		"	135 d.	Hospital gangrene.
74	J. M. Warren	Sept. 30, 1864	Spinster	F. 24	Tumor of leg	1 y.	Flap		Death	15 d.	Profuse secondary hæmorrhages.
75	Hodges	Oct. 11, 1864	Clerk	M. 20	Caries of tarsus	1 y.	Circular		Recovery	39 d.	Erysipelas.
76	Bigelow	Oct. 20, 1864	Comedian	M. 34	Necrosis of tibia	12 y.	Flap		"	77 d.	
77	Clark	Oct. 20, 1864	Seaman	M. 50	Gangrene of leg and foot	30 d.	"		"	71 d.	Following fract. of thigh and contusion of foot.
78	Gay	June 21, 1865	Minor	M. 12	Necrosis of tarsus	3 y.	Circular		Death	9 d.	Same patient as No. 135. D. fr. pyæm. as sh. at aut.
79	Bigelow	Nov. 11, 1865	Clerk	M. 29	Gangrene of tarsus	2 y.	Flap		Recovery	60 d.	Erysipelas.
80	Hodges	Nov. 20, 1865	Spinster	F. 45	Caries of tarsus	1 y.	Circular		"	27 d.	Resulting fr. fracture.
81	J. M. Warren	Nov. 22, 1866	Tailor	M. 7	Deformity of leg	28 y.	Flap		"	32 d.	
82	Clark	May 2, 1866	Seaman	M. 48	Ulcer of stump	1½ y.	"		"	51 d.	Chopart's amp. 1½ years ago for gangrene. Erysip.
83	"	May 3, 1866	Widow	M. 56	"	7 y.	"		Death	16 d.	Erysipelas.
84	"	May 16, 1866	Lawyer	F. 59	Necrosis of tibia	9 mo.	Circular		Recovery	48 d.	Primary amp. at 3 for gangrene 8 years ago.
85	J. M. Warren	May 22, 1866	Lt. Colonel	M. 27	Ulcer of stump	4 y.	Flap		"	34 d.	" " " bullet wound.
86	Hodges	May 18, 1866	Farmer	M. 26	"	2 y.	Teale's		"	39 d.	" " " 2 years ago. Intermittent fever.
87	"	Sept. 2, 1866	Laborer	M. 23	"	40 y.	Flap		Death	39 d.	
88	Bigelow	Dec. 15, 1866	Bootmaker	M. 60	Necrosis of tibia	2½ y.	"		Recovery	32 d.	
89	Hodges	Dec. 15, 1866	Operative	M. 19	Ulcer of leg	1 y.	Circular		Death	25 d.	Slough. of flaps. [Circumcision. Erysip.
90	Cabot	Dec. 20, 1866	Barber	F. 27	Caries of tarsus	6 mo.	Flap		Recovery	54 d.	Prim. amp. 2½ yrs. ago in 3 for bullet w'd. Syph.
91	J. M. Warren	Jan. 16, 1867	Clerk	M. 28	Ulcer of stump	2½ y.	Circular		"	28 d.	" " " " " " Erysip.
92	"	May 21, 1867	Widow	M. 22	"	18 y.	Flap		"	68 d.	
93	Bigelow	May 15, 1867	Minor	F. 50	" leg	6 mo.	Circular		"	37 d.	Amputation 21 mos. ago. Bullet wound.
94	"	Sept. 9, 1867	Painter	M. 16	" stump	5 y.	"		"	40 d.	" Cancer."
95	Gay	Sept. 16, 1867	Mechanic	M. 27	Tumor of foot	1½ y.	Flap		"	47 d.	Primary amp. at 3—3 13 years ago.
96	Hodges	Oct. 3, 1867	Operative	M. 32	Ulcer of stump	10 y.	Circular		"	81 d.	
97	Gay	Oct. 10, 1867	Minor	F. 20	Ankylosis at knee	2 y.	"		"	87 d.	Prim. amp. at 3 for gunshot wound.
98	"	Oct. 16, 1867	Mechanic	F. 20	Painful stump	1 y.	"		"	214 d.	Excision 2 mos. earlier. Resection of end of bones
99	"	Nov. 21, 1867	Widow	M. 32	Caries of tarsus	5 y.	"		"	57 d.	Sloughing of flaps. Resec. of end of bones 1 y. lat.
100	Cabot	Nov. 23, 1867	Carrier	F. 58	Ulcer of leg	2 mo.	Flap		"	86 d.	Following amp. of toe. Resec. of end of bones.
101	Bigelow	Jan. 18, 1868	Housewife	M. 28	Necrosis of tarsus	2 mo.	Circular		"	42 d.	Prim. amp. at 3—3, 4 yrs. ago at the war.
102	"	Feb. 12, 1868	Peddler	F. 23	Gangrene of foot	4 y.	Flap		"	29 d.	Tenotomy failed to remove deformity.
103	Clark	Mar. 31, 1868	Shoemaker	M. 27	Painful stump	17 y.	Syme's		"	52 d.	Primary amp. 5 years ago at 3 for bullet wound.
104	"	May 30, 1868	Tinsmith	M. 25	Pes equinus	2 y.	Flap		"	42 d.	Amp. 17 yrs. ago, at medio-tarsal artic. for gangr.
105	Bigelow	June 26, 1868	Domestic	F. 18	Painful stump	6 mo.	"		"	98 d.	
106	Coolidge	July 13, 1868	Cooper	M. 36	Caries of tarsus	2 mo.	Circular		"	41 d.	Amp. 4 years ago at 3 for bullet wound.
107	"	July 18, 1868	Tinsmith	M. 26	Ulcer of stump	4 y.	Flap		"	23 d.	" at 3 for comp. com. fracture.
108	Gay	Aug. 27, 1868	Laborer	M. 24	"	2 mo.	Circular		"	39 d.	Erysipelas.
109	Bigelow	Sept. 22, 1868	Farmer	M. 58	Necrosis of tibia	1 y.	"		"	20 d.	Almost healed over.
110	Hodges	Oct. 2, 1868	Minor	M. 19	"	1 y.	Flap		"	30 d.	Primary amp. at 3—3 for ulcer. (Vide Case 99.)
111	Gay	Dec. 1, 1868	Widow	F. 59	Ulcer of stump	4½ y.	"		"	34 d.	
112	Cabot	Dec. 8, 1868	Minor	M. 15	Necrosis of tibia		"		"		

Table 17 (concluded.)

AMPUTATIONS OF LEG.—PATHOLOGICAL.

No.	Operator.	Date.	Occupation.	Sex and Age.	Disease.	Duration.	Amputation. Method. Place.	Result.	Length of Time.	Details.			
113	Cabot	Dec. 17, 1868	Laborer	M. 23	Conical stump	4 y.	Flap	Recovery	35 d.	Primary amp. for caries of tarsus 4 years ago. " " comp. fract. of ankle 18 m. ago.			
114	"	April 7, 1869	Seaman	M. 19	Painful stump	1 y.	"	"	69 d.				
115	Gay	Sept. 14, 1869	Farmer	M. 69	Necrosis of tarsus	15 y.	Circular	"	52 d.				
116	Bigelow	Jan. 7, 1870	Minor	M. 11	" "	1 y.	Flap	"	88 d.	Alcoholic habit. Erysipelas. Secondary hæmorrhage. Erysipelas.			
117	Hodges	May 6, 1870	Housewife	F. 37	Gangrene of leg and foot]	3 mo.	"	"	46 d.				
118	Bigelow	June 28, 1870	Clerk	M. 22	Necrosis of tarsus	17 y.	Circular	"	47 d.				
119	"	Nov. 29, 1870	Laborer	M. 44	" "	9 mo.	Flap	"	66 d.				
120	Clark	Mar. 21, 1871	Minor	M. 17	" "	3 mo.	Circular	"					
Recovered, 104				Deaths from Exhaustion, 9				The causes of amputation were : Necrosis in				Tumors in	5 cases.
Died, 15				" " Pyæmia, 6				Ulcers of stump				Frost-bites	4 "
								Ulcers,				Deformities,	3 "
								Caries of tarsus, 16				Conical stumps,	3 "
								Gangrene,				Ankylos. at knee	2 "
								Painful stumps, 4				Club-feet,	2 "
								Ch. dis. ankle-joint 5				Atrophy,	1 "
Unrecorded, 1—Total, 120													
Ratio of mortality 12-60 per cent.													

Unrecorded, 1—Total, 120
Ratio of mortality 12.60 per cent.

The number of deaths from each cause is as follows:

Exhaustion,	98=54.44 per cent. of fatal cases
Pyæmia,	42=23.33 " "
Collapse,	21=11.61 " "
Shock,	8= 4.44 " "
Cerebral lesion,	2
" compression,	2
Peritonitis,	2
Tetanus,	2
Chloroform,	1
Malignant growth,	1
Unknown,	1

Total, 180 deaths in 692 cases=26.01 per cent. of mortality, exclusive of 7 cases in which the result is unknown or unrecorded.

This rate of mortality in Table 17 may be contrasted with that of Sir James Y. Simpson, calculated for British Hospitals with 100—200 beds, 23 per ct. (*Lancet*, Sept. 25, 1869, p. 431), with that of Mr. G. W. Callender for Country Hospitals having 150—270 beds, 18.86 per ct. (*Lancet*, Sept. 18, 1869, p. 420).

It may also be noted that the death rate from pyæmia compares very favorably with that reduced by Mr. Bryant from 300 cases of amputation in Guy's Hospital, in which it was 42 per cent. of all fatal cases. Sir J. Y. Simpson in his articles on "Hospitalism" holds that "50 per cent. of the deaths after amputation in our large hospitals are the result of pyæmia." (*Lancet*, Oct. 16, 1869, p. 538.)

The Massachusetts General Hospital contains 175 beds, including both medical and surgical, arranged in wards varying in capacity from 7 to 21 beds, and an out-building used for a foul-ward.

Tabular View of Results at the N. York, Pennsylvania and Boston City, and Massachusetts General Hospitals, and in the British Hospitals as reported by Sir James Y. Simpson.

TRAUMATIC PRIMARY.

	NEW YORK HOSP.				PENNSYLV. HOSP.				BOSTON CITY HOSP.				MASS. GEN. HOSP.			
	Recovered.	Died.	Total.	Ratio of Mortality.	Recovered.	Died.	Total.	Ratio of Mortality.	Recovered.	Died.	Total.	Ratio of Mortality.	Recovered.	Died.	Total.	Ratio of Mortality.
Should. joint	3	4	7	57.14	9	2	11	18.18	2	6	8	75.	7	8	15	53.33
Arm	14		14	0.	53	5	58	8.62	10	4	14	28.57	29	7	36	19.44
Forearm	8	2	10	20.	78	5	83	6.2	9		9	0.	22	7	29	24.13
Hip-joint		2	2	100.						2	2	100.		1	1	100.
Thigh	4	12	16	75.	14	10	24	41.66	6	15	21	71.42	34	25	59	42.37
Knee-joint													2	3	5	60.
Leg	10	7	17	41.17	51	32	83	38.55	11	7	18	38.88	63	33	96	34.37

TRAUMATIC SECONDARY. (After 24 hours).

	NEW YORK HOSP.				PENNSYLV. HOSP.				BOSTON CITY HOSP.				MASS. GEN. HOSP.			
	Recovered.	Died.	Total.	Ratio of Mortality.	Recovered.	Died.	Total.	Ratio of Mortality.	Recovered.	Died.	Total.	Ratio of Mortality.	Recovered.	Died.	Total.	Ratio of Mortality.
Should. joint	2	2	4	50.					1	1	2	50.				
Arm	3	1	4	25.	6	3	9	33.33	3	5	8	62.50	5	3	8	37.50
Forearm	2	1	3	33.33	7	4	11	36.36	2	0	2	0.	10	2	12	16.66
Hip-joint																
Thigh	8	6	14	42.85	9	6	15	40.	1	3	4	75.00	6	9	15	60.00
Knee-joint																
Leg	9	2	11	18.18	12	15	27	55.55	5	2	7	28.57	34	18	52	34.61

PATHOLOGICAL.

	NEW YORK HOSP.				PENNSYLV. HOSP.				BOSTON CITY HOSP.				MASS. GEN. HOSP.				SIMPSON.			
	Recovered.	Died.	Total.	Ratio of Mortality.	Recovered.	Died.	Total.	Ratio of Mortality.	Recovered.	Died.	Total.	Ratio of Mortality.	Recovered.	Died.	Total.	Ratio of Mortality.	Recovered.	Died.	Total.	Ratio of Mortality.
Should. joint	1	1	2	50.	1		1	0.	1		1	0.	8	3	11	27.27				
Arm	3		3	0.	3	1	4	25.00	4	1	5	20.	28	4	32	12.50	56	22	78	28.20
Forearm	5	2	7	28.57	6		6	0.	4	2	6	33.33	23	4	27	14.81	60	15	75	20.
Hip-joint													2	0	2	0.				
Thigh	15	6	21	28.57	28	9	37	24.32	12	4	16	25.00	128	34	162	20.98	392	239	631	37.87
Knee-joint													7	4	11	36.36				
Leg	12	4	16	25.	21	7	28	25.	6	1	7	14.28	104	15	119	12.60	194	89	283	31.45

SUMMARY OF THREE PRECEDING TABLES.

	NEW YORK HOSP.				PENNSYLV. HOSP.				BOSTON CITY HOSP.				MASS. GEN. HOSP.				SIMPSON.			
	Recovered.	Died.	Total.	Ratio of Mortality.	Recovered.	Died.	Total.	Ratio of Mortality.	Recovered.	Died.	Total.	Ratio of Mortality.	Recovered.	Died.	Total.	Ratio of Mortality.	Recovered.	Died.	Total.	Ratio of Mortality.
Should. joint	6	7	13	53.84	10	2	12	16.66	4	7	11	63.63	15	11	26	42.30	0	0	0	0
Arm	20	1	21	4.76	62	9	71	12.67	17	10	27	37.03	62	14	76	18.42	187	110	297	37.03
Forearm	15	5	20	25.	91	9	100.	9.	15	2	17	11.76	55	13	68	19.11	204	40	244	16.39
Hip-joint		2	2	100.						2	2	100.	2	1	3	33.33				
Thigh	27	24	51	47.05	51	25	76	32.89	19	22	41	53.65	168	68	236	28.81	500	435	935	46.52
Knee-joint													9	7	16	43.75				
Leg	31	13	44	29.54	84	54	138.	38.41	22	10	32	31.25	201	66	267	24.71	343	270	613	44.04

STATISTICS FOR THE FOUR AMERICAN HOSPITALS.

	TRAUM. PRIMARY.				TRAUM. SECONDARY.				PATHOLOGICAL.			
	Recovered.	Died.	Total.	Ratio of Mortality.	Recovered.	Died.	Total.	Ratio of Mortality.	Recovered.	Died.	Total.	Ratio of Mortality.
Should. joint	21	20	41	48.78	3	3	6	50.	11	4	15	26.66
Arm	106	16	122	13.11	17	12	29	41.37	38	6	44	13.63
Forearm	117	14	131	10.68	21	7	28	25.	38	8	46	17.39
Hip-joint		5	5	100.					2	0	2	00.00
Thigh	58	62	120	51.66	24	24	48	50.00	183	53	236	22.03
Knee-joint	2	3	5	60.00					7	4	11	36.36
Leg	135	79	214	36.91	60	37	97	38.14	143	27	170	15.88

In view of contradictory opinions which have been held as to the effect of Chloroform upon the final result of surgical operations, it may be interesting to examine the foregoing tables with a view to deciding it may be in some measure the effect produced by the use of Sulphuric Ether upon the mortality of operations. The dividing line is fixed at January 1st, 1847, that being the date from which the use of this anæsthetic became the established habit in the Massachusetts General Hospital.

No. of Table.	Limb.	Subdivision.	BEFORE ETHER.			AFTER ETHER.		
			Recovered.	Died.	Ratio of Mortality.	Recovered.	Died.	Ratio of Mortality.
5	Arm	Pathological	4	0	0.	24	4	14.28
6	Forearm	Traumatic Primary	2	0	0.	22	7	24.13
7	"	" Secondary	1	1	50.	11	1	8.33
8	"	Pathological	4	0	0.	19	4	17.39
10	Thigh	Traumatic Primary	3	3	50.	31	22	41.50
11	"	" Secondary	2	1	33.33	4	8	66.66
12	"	Pathological	26	7	21.21	102	26	20.31
15	Leg	Traumatic Primary	4	1	20.00	59	32	35.16
16	"	" Secondary	5	3	37.50	29	15	34.09
17	"	Pathological	20	1	5.	84	14	14.28
			71	17	19.31	385	133	25.67

At first view this would seem conclusive against the use of anæsthetics, but a moment's reflection renders the fallacy sufficiently obvious. A vast number of operations, especially in chronic or long-continued cases, are submitted to by patients and willingly undertaken by surgeons at the present day, owing to the entire immunity from pain and the diminished danger from shock, which previous to the discovery of anæsthesia would not have been tolerated. Among these many, as is well known, terminate in recovery which formerly were allowed to die unrelieved, the mortality then not being less, but only attributable to the disease and not to the operation. Furthermore, it must be remembered that improved methods of treatment restrict amputations more and more of late years to cases of the worst character, offering often at the best but a faint chance of preserving life.

In 1856 Dr. James Arnott presented statistics to prove that chloroform had increased the danger of operations, but these were contradicted by other observers. So many considerations interpose, that a *post hoc* cannot become a *propter hoc* argument in a matter involving so many qualifying circumstances. Finally, in deciding this point, the kind of anæsthetic employed must not be lost sight of. If the paralyzing effect of chloroform upon the heart be as great as is alleged, the use of sulphuric ether is assumed, at least on this side the water, to be comparatively harmless.

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